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# Three Essays on Corporate Control

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# THREE ESSAYS ON CORPORATE CONTROL

A Dissertation Presented

by

NING PU

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**THREE ESSAYS ON CORPORATE CONTROL**

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## DEDICATION

*To grandparents, parents, Steve, and Maddie*

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With profound gratitude, I dedicate this dissertation to my grandfather, my parents, my husband, and our soon-to-be-born baby girl Madison.

**ABSTRACT**

**THREE ESSAYS ON CORPORATE CONTROL**

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Chapter 1 compares and contrasts the activism styles and outcomes of hedge-fund activists versus traditional institutional activists in an attempt to understand what drives the returns of institutional activism. Contrary to the popular belief that hedge-fund activism is designed to achieve a short-term payoff at the expense of long-term profitability, I find some evidence consistent with the hypothesis that hedge-fund activists can be effective monitors, especially when multiple hedge funds collaborate on the monitoring efforts. This result is supported by examining the relations between the holdings by different types of hedge-fund activists and the outcomes of proposed M&A deals, such as acquirer announcement-period CARs, buy-and-hold abnormal returns, acquirer long-run operating performance, means of financing, deal status, and deal attitude. On the other hand, hedge funds that carry out individualistic activism efforts don't appear to exert effective monitoring efforts in the context of M&As. Concurring with the previous studies on pension-fund activism, this paper finds that traditional institutional activists, as represented by activist pension funds and several activist mutual funds, tend to be effective monitors of M&A acquirers. Additionally, cross-holding analysis of the two groups of institutional activists (hedge funds vs. non-hedge funds) provides further evidence corroborative of the hypothesis that cross-holding activists who realize gains in both acquirers and targets tend to be effective monitors at the first place.

Chapter 2 examines an expanded version of acquisition probability hypothesis proposed by Song and Walkling (2000). In contrast to the previous papers that find positive rival announcement-period abnormal returns, I find only rivals associated with value-creating deals experience positive

announcement-period abnormal returns. In addition to studying the announcement-period abnormal returns, I also analyze the extent of impact on rivals around deal terminations and deal completions. The results show that rivals that experience higher announcement-period abnormal returns also tend to experience higher termination-period and completion-period returns, consistent with the predictions of the acquisition probability hypothesis. More direct tests of the hypothesis confirm that the rival announcement-period CARs are positively and significantly associated with the predicted probability of rivals becoming subsequent targets, and thus providing direct evidence corroborative of the acquisition probability hypothesis.

Chapter 3 studies the impact of CalPERS Focus List (CFL) program have on bondholders' wealth. In contrast to the extant research documenting positive abnormal returns to shareholders of the firms subject to pension fund activism, I find that CalPERS Focus List (CFL) program significantly reduces existing bondholders' wealth. In the year subsequent to the releases of CalPERS' Focus List, 57% of outstanding bonds of target firms underwent downgrade. Additionally, I find evidence of an expropriation of wealth from the bondholder to the shareholder based on long-horizon analysis. The source of wealth transfer from bondholders to stockholders appear to come from rapid asset sales of the CFL firms following the targeting.

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# CHAPTER 1

# SHAREHOLDER ACTIVISM AND THE MARKET FOR CORPORATE CONTROL

## 1.1 Introduction

This paper describes an empirical investigation of the impact of shareholder activism on the market for corporate control. The current study analyzes how hedge-fund activists and traditional institutional activists differ in their impacts on various aspects of mergers and acquisitions. Hedge fund activists are often criticized for their short-term investment horizon. This inherent "short-termism" could cause hedge fund activists to focus myopically on short-term gains, at the cost of the long-term performance of their investments. Mergers and acquisitions (M&As) offer an ideal framework to test the verity of this allegation. Previously, legal scholars[1] pointed out that traditional activists tend to focus on corporate governance activism, whereas hedge-fund activists engage in both corporate-governance and corporate-control activism. If so, shareholder activism by hedge fund activists and traditional institutions may well have diverging impacts on M&A transactions. No empirical study, to my knowledge, has set out to examine the extent of impacts these two types of shareholder activism have in M&As.

Shareholder activism by traditional institutions, represented by public pension funds, have been in fashion since the late 1980s. Due to the scope of pension fund assets, most of pension fund portfolios are either indexed or semi-indexed. As a result, selling shares of the underperforming portfolio firms is not always an attractive option for pension fund activists. The lack of trading as a disciplinary device helps focus these traditional activists on monitoring efforts in order to achieve higher portfolio returns

[1] Kahan and Rock [2007]

over the long run. Hedge fund activism is a relatively new phenomenon that rose to popularity in the 2000s. With the rapid growth of hedge fund assets, more and more hedge funds are equipped with resources and abilities to become blockholders or even acquirers of a portfolio company at their choice. As a result, we have witnessed a rising wave of hedge fund activism in more recent years.

Through gathering real-world evidence of shareholder activism, more recent legal studies have categorically viewed shareholder activism done by traditional institutions and hedge fund activists as being very different. Kahan and Rock [2007], for example, described activism initiated by traditional institutions to be incidental and ex-post, whereas activism led by hedge funds activists to be strategic and ex-ante. The paper explains that traditional activists, such as pension funds, consider activism if and only if one or more of their holding firms have been consistently underperforming and thus, activism ensued, retrospectively, to steer better stock performance for these companies. On the contrary, hedge fund activists only accumulate company shares in an effort to advance their strategic objectives, which include but are not limited to issues related to corporate governance, business strategy, and corporate control.

When pension funds decide to become active, their standard modus operandi is to reach out to the management of the "target" company through private communications, such as sending letters or making telephone calls. Given the relative effectiveness of these communications, pension funds then decide whether to go back to doing nothing or escalade the activism effort to the next level by filing a shareholder proposal. Due to limited funding available to monitoring, however, pension fund activists rarely go beyond the confines of submitting shareholder proposals. As opposed to the limited means pension funds have in undertaking activism, hedge fund activists are relatively unrestricted in choosing ways to advance their activism objectives. On top of the traditional activism tactics, hedge fund activists have also conducted proxy fights, launched litigations, and, in some cases, acquired companies in order to meet their goals (Greenwood and Schor [2009]).

In the context of mergers and acquisitions, a proponderous of previous papers have found that M&As tend to create values for target shareholders, but destroy value or create insignificant amount of net positive value for acquirer shareholders[2]. The most populous explanation in the literature to why value-destroying M&As still occur is that M&A events are often driven by agency problems, such

[2]Asquith and Mullins [1986], Healy et al. [1992],Mitchell and Stafford [2000], Boone and Mulherin [2007]

as the empire-building motives and hubris of acquirer management. Under this premise, I expect that shareholder activists can create value through two channels. The first channel involves mitigating the impact of agency problems. The second channel involves HF activists proactively seeking out suitable bidders to take over the portfolio companies previously acquirered and currently owned by HF activists[3]. In either case, I expect that activist involvements in M&As would increase the amount of monitoring / bargaining power of their holding firms and consequently lead to better performance of these companies in both short run and long run.

To test this assumption, I obtained a list of the top 200 activist hedge funds published by The Altman Group. I then augmented the list with 15 traditional shareholder activists who are identified by previous studies [4] as effective monitors. Through merging the updated list of activist funds with Thomson 13f institutional holding database, Thomson SDC Platinum M&A database, CRSP, and COMPUSTAT database, I form the base sample for the empirical analysis of this paper. Using a combination of graphical presentations and regression analysis, I find that HF activists, on average, are not as short-term oriented as some critics may expect. While they do generally have a shorter investment horizon than traditional institutional activists, HF activists typically invest in acquirers for more than a year. Using a wide range of performance metrics, I find that the collaborative form of HF activism tend to be the most effective in achieving superior acquirer results, according to announcement CARs, buy-and-hold stock returns, and post-announcement operating performance of acquirers. Separate HF activism efforts, however, don't appear to deliver the same caliber of superior results in acquirers that collaborative form of HF activism does. The same is not exactly true for traditional activists. While I find strong evidence that collaborative form of activism efforts by traditional activists are effective in delivering superior results in acquirers, I didn't find any evidence suggesting separate activism efforts by traditional activists are able to influence acquirer performances.

If activist involvements in acquirers are able to influence acquirer performances through monitoring, then I expect the same hypothesis would also hold for activist cross-holders, who have exposures to both sides of the M&A transactions. By dividing activist cross-holders into three different categories, based on the level of wealth creations for activist cross-holders around deal announcements, I find that activist

[3]Greenwood and Schor [2009]

[4]Wahal [1996], Del Guercio and Hawkins [1999], Greenwood and Schor [2009]

cross-holders who realize gains in both acquirers and targets (i.e., Type-1 cross-holders) are associated with higher acquirer CARs and lower takeover premiums, which are signs of successful monitoring. On the other hand, activist cross-holders who didn't realize gains on both sides (Type-2 cross-holders) and activist cross-holders who generate losses in both sides (Type-3 cross-holders) are associated with lower acquirer CARs, lower takeover premiums, and higher percentage of stock financing, which are signs of partially ineffective monitoring. In overall, the cross-holding analysis shows more supportive evidence to the claim that shareholder activists, both hedge funds and traditional institutions, create shareholder values through monitoring.

This paper is, to my knowledge, the first empirical study that compares and contrasts the extent of impacts that HF activists and traditional activists have on the market of corporate control. To distinguish HF activists and traditional activists, I refer to traditional activists as the non-HF activists in the remainder of the paper. Using a sample of 121 institutional shareholder activists (107 hedge fund activists and 14 long-term activists), I study the styles, portfolio holdings, and activism consequences of HF activists and non-HF activists against the backdrop of mergers and acquisitions. The remainder of the paper is structured as below. Section 2 introduces the background of shareholder activism and reviews the relevant literature. Section 3 explains sample formation, variable construction, methodologies, and the hypothesis development. The empirical analysis and their corresponding results are presented in Section 4, in which I first analyze the differences in holding sizes and M&A deal coverage between HF activists and non-HF activists. Then, I proceed to compare and constrast the firm characteristics of the acquirers held by the two groups of shareholder activists. Next, I revisit the question - whether activism by HF activists and non-HF activists create value for shareholders. Specifically, I follow the event-study approach to analyze short-term announcement-window CARs, long-term stock returns, and operating performance of acquirers. I also extended the empirical analysis to explore whether hedge fund activists exert monitoring power in shaping other aspects of M&As, such as deal completion status, deal attitude, and payment method. Last but not least, I expanded the analysis to explore how activists with cross-holding on both sides of the M&A transaction impact on various deal outcomes. Section 5 concludes.

## 1.2 Background and Literature Review

Agency problem that arises from the conflict of interest problem inherent in the relationship between corporate managers and shareholders has been well-documented in the finance literature[5]. Under the modern corporate structure, where ownership is seperated from control, corporate managers (agents) are hired by shareholders (owners) to make decisions that maximize shareholder wealth. To mitigate the concerns that corporate managers would prioritize in serving their own best interests instead of serving the shareholders, corporate boards, which function as an internal monitoring mechnism, are established to monitor corporate managers. In practice, however, this internal monitoring mechnism has proved to be flawed. Empirical evidence has shown that board of directors tend to look after their own best interests by siding with the management and hence neglect their duty to monitor. Moreover, board members could elect to add provisions (such as a staggered board or golden parachutes, etc.) to reduce shareholder rights and to resist hostile takeovers[6].

Small shareholders of the company are not equipped with incentives or the ability to combat corporate management or board of directors, due to the considerable expense associated with asserting shareholder rights as well as the limited impact of their individual holdings. Large shareholders, especially institutional blockholders (a mininum of 5% ownership of the company), however, would have stronge enough incentives to monitor, since they are more likely to offset the cost of monitoring with their gain from it. The early literature in institutional oversight conjecture that only blockholders would monitor in the presence of free-rider problem (Grossman and Hart [1980]; Shleifer and Vishny [1986]). Thus, institutional oversight is posited to be the second internal monitoring device, in addition to the board of directors. Following this chain of thought, traditional institutional investors, such as pension funds, mutual funds, banks, and insurance companies, with the largest and perhaps the most diversified stock holdings across Corporate America, should in theory be the ideal corporate monitors.

In practice, however, some groups of traditional institutions might lack proper incentives to monitor due to various regulatory restrictions and conflict of interest problems. Banks, insurance companies and mutual funds, for example, are required to meet the diversification requirements in sub-chapter

[5] Jensen [1986], Lang et al. [1991]
[6] Gompers et al. [2003], Bebchuk and Weisbach [2010]

M of the Internal Revenue Code. Banks and insurance companies, especially, are limited in their ability to own equity at all. Mutual funds and similar types of funds (i.e., ETFs, closed-end funds, variable annuities, etc.), while they enjoy the advantage being allowed to own shares in a large number of companies, are subject to regulatory restrictions on performance fee, liquidity requirements, and various disclosure requirements (Kahan and Rock [2007]). Moveover, mutual funds need to maintain their business ties with their portfolio companies, and thus, the inherent conflict of interest problem dampens their incentives to spearhead the activism effort.

Pension funds, on the other hand, are not subject to diversification requirements or any of the regulatory restrictions on performance fees, liquidity requirements, etc. Unlike banks, insurance companies, and mutual funds, public and private pension funds are relatively independent entities with no business ties with their portfolio firms. Furthermore, the fiduciary duty embedded in pension funds to invest as "a prudent man", as embodied in ERISA, also gives pension funds incentives to promote "good corporate governance" in their portfolio firms[7].

Many papers have studied how pension funds (i.e., public and private pension funds) monitor in practice and whether their activism efforts have proven to be effective. The literature has identified two broad channels for pension fund activism. The first channel involves conducting private negotiations with corporate management to reach a consensus. The second channel focuses on seeking governance changes through (actual or threatened) shareholder proposals. Both channels of pension fund activism aim to change corporate governance rules, rather than focus on specific aspect of business operations, such as mergers and acquisitions, share buy-backs, spin-offs, etc.

The first channel of pension-fund activism, or the "behind-the-scenes" negotiations with corporate management, follow certain patterns. After identifying governance problems in their portfolio companies, pension funds get in touch with the management or the board of directors of these companies through private letters or phone calls. Since these negotiations are conducted in private, the effectiveness of these efforts is difficult to measure. Carleton et al. [1998], using the private correspondence between TIAA-CREF and 45 firms it contacted on governance issues (e.g., confidential voting, board diversity, and limitations on targeted stock placement, etc.), find evidence that TIAA-CREF is able to

[7]See, e.g., Black [1991] (quoting Dale Hanson of CalPERS as saying:"We primarily view our corporate governance efforts as a fiduciary responsibility...").

reach consensus with targeted companies more than 95 percent of time. Yet, most studies are skeptical on the notion that institutions can achieve significant changes through private negotiations (Kahan and Rock [2007]).

The second activism channel for pension funds is by submitting shareholder proposals under Security and Exchange Commission Rule 14a-8[8]. While seeking governance changes through shareholder proposals has largely been the domain of public pension funds, these institutions would only resort to this channel after failing to establish agreements with management of targeted firms in private negotiations (Prevost and Rao [2000]). Shareholder proposals sponsored by pension funds request changes in different areas of corporate governance, ranging from altering board governance structure or management incentive structure to the removal of takeover defenses[9].

Even though some evidence suggests that shareholder resolutions sponored by large pension fund activists tend to solicit more shareholder votes[10], a preponderance of papers find that pension-fund-sponsored shareholder proposals are followed with insignificant changes in governance[11]. Scholars have used different criteria to measure activism success. Short-term and long-term event-study abnormal stock returns are used to gauge the effect of activism on firm performance. To my knowledge, only one event study[12] has indicated substantially positive impact on target companies, whereby other event studies have rendered negligible, if not significantly negative, returns for target firms[13]. This result is robust to using different event windows, such as those associated with initial press announcements, proxy mailing date, shareholder meeting date, etc. A few papers study changes in target firm's operations / management or specific actions sought by activists, however, did find positive results[14]. Also, the literature has established some support for the proposition that the effect of activism on target firm value tends to vary on the basis of the proposal type and the identity of the proposal sponsor. For example, Smith [1996] found positive and statistically significant abnormal stock returns for some proposals, such as those classified as performance-related, and negative and statistically significant

[8]SEC Rule 14a-8 permits a shareholder to include a proposal and a 500-word supporting statement in the proxy statement distributed by a company for its annual shareholder meeting.

[9]Gordon and Pound [1993]; Bizjak and Marquette [1998]; Del Guercio and Hawkins [1999]

[10]Gordon and Pound [1993]

[11]Wahal [1996], Karpoff [2001]

[12]Nesbitt [1994]

[13]Karpoff et al. [1996], Wahal [1996], Gillan and Starks [2000], Prevost and Rao [2000]

[14]Bizjak and Marquette [1998]; Del Guercio and Hawkins [1999]

stock returns for other types of proposals, such as those classified as takeover-related. Additionally, Del Guercio and Hawkins [1999] found that proposals sponsored by CalPERS and SWIB tend to be associated with positive and significant abnormal stock returns[15]. Taken as a whole, however, the current evidence in the literature is consistent with the proposition that pension fund activists, aside from a few outliers, achieve little through their activism efforts.

Critics of pension fund activism point out that public pension funds spend a trivial amount of money on activism. In particular, Black [1998] explained that the advantage of using Rule 14a-8 is to help shareholder activists avoid expenses relating to preparing its own proxy statement and soliciting its own proxies. Avoiding expenses is important, since pension fund activists have limited funds to commit to this activity and don't want to impact on their returns adversely, while let their less active peers free ride on their monitoring effort. For the same reason, pension fund activists generally stay away from more drastic styles of activism, such as conducting proxy contests and elect their own candidates to the board of directors, activities which tend to be very costly[16]. Also, Kahan and Rock [2007] indicates that shareholder proposals, the primary means of pension fund activism, is only precatory (non-binding). Thus, even if a board agrees to adopt the proposed policy change, it can still feel free to change it later. Furthermore, some pointers indicate that pension fund officials may lack both the skills and incentives to maximize returns of their portfolio companies[17]. Combining the above evidence, the minute effects pension-fund activism has on firm performance should be expected.

In light of the lackluster performance of pension fund activism, recent papers have suggested that hedge funds might be better shareholder monitors. Hedge fund activism is a relatively new phenominon that rose to popularity in the 2000s. With the rapid expansion of hedge fund assets, a small subset of hedge funds have chosen to specialize in direct corporate engagements, with the stated goal of creating value for shareholders. Hedge funds employ highly incentivized professionals to manage largely unregulated pools of capital. Because they are not subject to extensive regulations like pension funds and mutual funds, hedge funds can hold highly concentrated stakes in a small number of firms. In the absence of political and regulatory constraints, hedge funds can also launch costly and aggressive activism campaigns against management of the target companies. In the past decade, hedge fund

[15]Smith [1996]; Del Guercio and Hawkins [1999]
[16]Black [1998]
[17]Murphy and Van Nuys [1994], Black [1998]

activists have threatened or commenced proxy contests, made bids to acquire companies, pushed for a merger between companies, even threatened and pushed litigations against corporations that led to ouster of top management. While hedge fund activism has the disposition to be more aggressive than pension fund activism, hedge fund activists are not always hostile. They rely on management of target firms to implement their value-creation agendas and would only become hostile once the management is not receptive to their ideas.

Given that hedge fund activism is nascent, the body of literature in this area is relatively small. All the existing research, of which I am aware, examining the consequences of hedge fund activism, base their analyses on samples of Schedule 13D filings. Brav et al. [2008] find positive market reactions for a sample of confrontational and nonconfrontational hedge fund Schedule 13D filings. Clifford [2008] show larger excess stock returns and improvements in operating performance (ROA) for firms targeted by hedge funds filing Schedule 13Ds versus the same group of hedge funds filing Schedule 13Gs. Klein and Zur [2009] study activism between confrontational hedge funds and another group of confrontational activists (consisted of individuals, PE funds, VC funds, etc) and find significantly positive short-term and long-term abnormal stock returns for both groups of confrontational activists surrounding the initial Schedule 13D filing dates. Greenwood and Schor [2009], dividing Schedule 13D filings into those filed by hedge-fund activists and non-hedge fund activists, find that hedge fund activists, with shorter investment horizons, are less interested in making significant corporate governance changes but are more interested to seeing their targets bought out. In general, most of the aforementioned papers find that hedge fund activism is associated with significantly positive abnormal stock returns around schedule 13D filing dates, as well as long-term stock and operating performance of the target firms.

As hedge fund activism gradually becoming a force to be reckoned with in the realm of shareholder activism, empirical evidence shows that traditional institutions, including pension funds and a number of mutual funds, have also joined hands with activist hedge funds in exerting controls (Kahan and Rock [2007]). Even though both groups of activists are found to be active, none of the studies, with which I am familiar, have distinguished the amount of value creations between these two groups of activists in both the short-run and long-run. Also, no study known to me has analyzed the extent to which hedge fund activists and non-HF activists collaborate in their monitoring effort, and whether M&A

deals with joint activism effort achieve better results than separate activism efforts. Furthermore, most empirical work has so far tested the effectiveness of hedge fund activism through analyzing short-term / long-term stock performance and operating performance of the targeted companies, no paper of which I am aware has studied whether hedge fund activists also monitor other aspects of M&As in order to maximize wealth for shareholders. This paper seeks to fill these voids.

## 1.3 Data and Variable Selections

### 1.3.1 Sample construction

To form the sample of activist hedge funds, I obtained a list of the top 200 activist hedge funds published by The Altman Group. This list reports the names of activist hedge funds, number of activist situations of each hedge fund, and other meta data, such as the geographic location, contact information, etc. I then manually look up each of the listed hedge funds by name to see if a match can be found in the 13f database. If a match is found, I then manually attach the assigned manager number (i.e., mgrno), as given by the 13f database, to the matching hedge fund. This process generates 107 matching hedge funds in 13f. By using the list of 107 activist hedge funds as a starting point, I implicitly assume that all these hedge funds retain the option to use shareholder activism as an investment strategy, when attractive to do so.

To construct the sample of the traditional activists (or the non-HF activists hereafter), I surveyed through the extant academic and professional journals to compile a list of traditional activists, who are widely considered as the most effective and active shareholder activists. Institutional Shareholder Services (ISS), a proxy advisory firm for institutional investors, report that a group of large state pension funds, led by CalPERS, have been especially active in exerting monitoring and influencing efforts since 1987. They are CalPERS, CalSTRS, ColPera, Florida State Board of Administration, New York State Common Retirement System, Ontario Teachers Pension Plan Board, Penn Public School Employee Retirement System, State of Wisconsin Investment Board, and TIAA-CREF. Del Guercio and Hawkins (1999) find that CREF, CalPERS, CalSTRS, SWIB, and NYC tend to be more successful at monitoring and promoting change through submitting shareholder proposals. Carleton

et al. [1998] show that TIAA-CREF is able to reach agreements with their portfolio companies more than 95 percent of the time, based on private correspondence between TIAA-CREF and 45 of their portfolio companies. Moreover, Greenwood and Schor [2009] indicate that most of non-hedge fund 13D filings can be traced to Franklin Mutual Advisors and Franklin Resources, Gabelli Asset Management, and Ontario Teachers Pension Plan Board.

Combining the existing evidence, I assemble a sample of 14 non-HF shareholder activists. They are CalPERS, CalSTRS, ColPera, Florida State Board of Administration, Franklin Resources, Gabelli Funds Inc, Gabelli Funds LLC, Gabelli Securities Inc, GAMCO Investors, New York State Common Retirement System, Ontario Teachers Pension Plan Board, Penn Public School Employee Retirement System, State of Wisconsin Investment Board, TIAA-CREF. A detailed list of all the activists funds included in the final analysis sample is in 3.5.

### 1.3.2 Activist Involvement

To test whether HF activist and non-HF activist monitor and the extent of their monitoring efforts, I created three variables for each group of activists, as proxies for the level of activist involvement in their respective holding companies. These activist holding variables jointly assess the effects of activist monitoring. These activist involvement variables are specified as below:

**HF ACTIVIST INVOLVEMENT VARIABLES**

**i. Number of HF activists**

To magnify the effectiveness of monitoring, HF activists could combine resources to launch activism campaigns together. Higher number of HF activists could mean higher level of collaborative monitoring effort and joint resources dedicated to the activism campaign, and subsequently, the better the monitoring outcome. Based on this assumption, I calculate the number of HF activists with ownership in each acquirer to proxy the joint power of HF activist monitoring.

**ii. Maximum HF percentage holding**

The finance literature has established that, in the presence of free-rider problem, large shareholders are equipped with the greatest incentives to monitor, while small shareholders are least likely to

monitor (Grossman and Hart [1980], Shleifer and Vishny [1986]). Consistent with this prediction, the shareholder with the largest percentage holding should be the one with the greatest incentive to monitor. Hence, I calculated the percentage holding for each HF activist, and then rank them from highest to the lowerst. The HF activist with the highest percentage holding is used to proxy the maximum monitoring power of an individual HF activist.

**iii. HF activist Herfindahl Index**

Many previous papers has suggested that institutional ownership concentration plays an important role in the theories of monitoring (Shleifer and Vishny [1986]; Stulz et al. [1990]). More recently, empirical studies[18] support this hypothesis by showing that only large institutions with concentrated holdings monitor. To proxy for the degree of HF activist ownership concentration, I calculated the Herfindahl index, based on the percentage ownership of HF activists in each acquirer. A higher HF activist Herfindahl index indicates higher HF activist ownership concentration in each acquirer.

**NON-HF ACTIVIST INVOLVEMENT VARIABLES**

**i. Number of non-HF activists**

Similar to HF activists, non-HF activists could collaborate to reinforce the outcome of monitoring. To proxy for the amount of joint monitoring efforts, I calculated the number of non-HF activists in each acquirer. Should non-HF activists choose to collaborate in their monitoring efforts, we should see a higher level of monitoring effectiveness associated with higher number of non-HF activists.

**ii. Maximum non-HF activist percentage holding**

Consistent with the prediction that only large shareholders monitor while small shareholders don't, I calculate the maximum non-HF activist percentage holding in each acquirer to proxy for the maximum level of monitoring power by individual non-HF activists in acquirers.

**iii. Non-HF activist Herfindahl Index**

Since institutional ownership concentration plays an important role in the theories of monitoring, I computed the Herfindahl index, based on the percentage ownership of non-HF activists in each acquirer.

[18] Chen et al. [2007]

Higher non-HF activist Herfindahl index proxies for higher non-HF activist ownership concentration in acquirer.

### 1.3.3 Methodology

This paper uses graphical presentations in combination with regression analysis to help reach conclusions regarding the level and direction of activist impacts on a particular aspect of M&A transactions.

#### 1.3.3.1 Graphical Presentations

Most of the graphical presentations in Section 4 illustrate stock performances of acquirers or targets with either high-level or low-level activist holdings. Herein, acquirers with high-level / low-level activist holdings, for example, refer to acquirers whose combined ownership by a particular type of activists (i.e. HF or non-HF or activist in general) rank within the top-quintile / bottom-quintile, respectively, among all acquirers. To divide activist- / target- ownerships into quintiles, I first aggregate the percentage ownership associated with each category of activists (i.e. HF, non-HF, or activist in overall) for each company (i.e., acquirer or target) included in the sample. This process creates a summary table that shows for each company (either acquirer or target) in the sample, the aggregated percentage ownership associated with each category of activists (i.e. HF, non-HF, or activist in overall). Then, I divide the aggregated percentage ownership associated with each category of activists into quintiles, based on the sorted combined ownership in each activist category. Subsequently, I labeled the top-quintile and the bottom-quintile in each aggregate holding category the high-level and the low-level holdings, respectively. Finally, the graphical presentations are the time-series plots of the stock performances associated with either high- or low- level of activist holdings for each group of shareholder activists.

#### 1.3.3.2 Regression Analysis

To buttress the results from the graphical presentations, I use Heckman's two-stage regression model for sample-selection bias (Heckman [1979]) to test the relations between activist involvement variables and the chosen dependent variables. The Heckman's two-stage model is used, instead of the standard OLS or logit models, to account for the potential selection bias in the underlying analysis sample. Selection

bias problem arises from a non-randomly selected sample. Since I formed the analysis sample by merging several data universes (SDC Platinum, COMPUSTAT, CRSP, Thomson 13f) by the available ticker symbols and CUSIP numbers, the final analysis sample contains only announced deals that are marked either 'completed' or 'withdrawn' in SDC Platinum database, and furthermore, acquirers and targets must be US companies. Moreover, the matching procedure requires that these acquirers are also recorded in CRSP, COMPUSTAT and Thomson 13f databases, which are subject to survivor bias problems themselves. As the result, the final sample includes only acquirer firms that are publicly listed in the U.S., and thus private acquirers that are not recorded in any or all of the aforementioned databases are truncated from the final analysis sample. Hence, selection bias problem arises.

Heckman's two-stage model is based on Heckman's insight that sample selection can be viewed as a form of omitted-variable bias, which can be treated by including the estimated "omitted variables" in the regression. Stage-1 of the Heckman model involves estimating a probit model, also known as an selection equation, to the population model of interest. The probit model would presumably includes all the explanatory variables that affect the selection of the binary dependent variable that dictates the selection outcome; namely, 1 if the outcome is observed or 0 otherwise. Based on the estimates of the probit model, the estimated regressors (or linear predictors) are then used to compute the inverse Mills ratio (IMR)[19]. Given that the standard error in the probit model follows a standard normal distribution, then it can be shown that the value of the omitted variable can be approximated by IMR. By including IMR as an additional regressor in the stage-2 model, also known as an output equation, the estimates of the observed regressors in stage-2 model become unbiased again.

More specifically, the Heckman's two-stage model can be illustrated as follows. The goal of the Heckman's two-stage model is to come up with unbiased parameter estimates $\beta$ to a host of observed variables $X$, as below:

$$y = X\beta + u,\ E(u|X) = 0$$

However, the observation of the dependent variable $y$ relies on a binary instrumental variable $s$,

[19]The inverse Mills ratio is the ratio of the probability density function to the cumulative distribution function of a distribution, or dnorm(selection$linear.predictors)/pnorm(selection$linear.predictors)

where $s = 1$ if $y$ is observation, and zero otherwise. The likelihood of $s = 1$ could be estimated in a probit model by including all possible elements that contribute to the occurance of $s = 1$:

$$s = 1[Z\gamma + v \geq 0]$$

We can write out $X\beta = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k$ and $Z\gamma = \gamma_0 + \gamma_1 z_1 + \ldots + \gamma_m z_m$. Herein, $X$ represents the observed exogenous variables and $Z$ represents both the observed and the unobserved exogenous variables. Ergo, $X$ is a strict subset of $Z$. An unbiased estimation of $\beta$ require that the expected value of the endogenous variable $y$ given $X$ is equal to $X\beta$, or the expected value of the residuals given $X$ is zero. However, since the observed $y$ is only a non-randomly selected subset of the true population $y$ and moreover, $X$ is only a subset of all relevant exogenous variables $Z$, the expected value of $y$ conditional on $Z$ and $v$ gives

$$E(y|Z, v) = X\beta + E(u|Z, v)$$

Given a standard assumption that assumes the error term $u$ is uncorrelated with the exogenous variables $X$ and$Z$ or $E(u|X, Z) = 0$, the expected value of $y$ becomes

$$E(y|Z, v) = X\beta + E(u|v)$$

From this equation, we can easily see that the presence of selection bias problem rests on the correlation between $u$ and$v$. If we assume that $u$ and $v$ are jointly normal with mean zero, then $E(u|v) = \rho v$ where $\rho$ is the correlation coefficient between $u$ and $v$. However, $v$ is not observable, but $s$ is. If we refit the $E(y|Z, v)$ equation to compute $E(y|Z, s)$, then we have

$$E(y|Z, s) = X\beta + \rho E(v|Z, s)$$

It can be shown that $E(v|Z, s)$ is simply the inverse Mills ratio, $\lambda(Z\gamma)$, when $s = 1$. This leads to the most illuminating equation in Heckman's model

$$E(y|Z, s = 1) = X\beta + \rho\lambda(Z\gamma)$$

which means the expected value of $y$, given $Z$ and $s = 1$, can be estimated by regressing $y$ on a vector of the observed exogenous variable $X$ and an additional regressor $\lambda$, or the inverse Mills ratio.

If the correlation coefficient $\rho = 0$, then $u$ and $v$ are not correlated, and thus, simply regressing $y$ on $X$ gives unbiased estimators. However, if $\rho \neq 0$, then the term $\lambda$ evaluated at $Z\gamma$ must be included in order to fix the sample selection problem. Furthermore, the truncation effect is computed as the product of$\rho$and $\lambda$. The sign of the product shows how much the dependent variable in the Heckman stage-2 regression is shifted up (or down) due to selection or truncation effect.

This paper relies on Heckman's two-stage model to analyze the impact of activist involvement variables on five different aspects of M&A transactions. These five different aspects of M&A transactions include deal offer premiums, announcement-window CARs, long-run stock and operating performances of acquirers, method of payment, deal attitude, and deal status. For all but 'deal attitude' and 'deal status', the stage-2 models are (OLS) regressions. I use logit regressions in the stage-2 model to estimate the impact of activist involvement on 'deal attitude' and 'deal status', since 'deal attitude' is a binary variable designating either friendly or hostile deals, and 'deal status' is a binary variable designating either deal completion or deal withdrawn.

For each empirical investigation, I also estimate a single-variate regression in conjunction with the multiple regressions in each of the stage-2 model. Only activist involvement variables that appear statistically significant in both regressions are reported. To limit outliers from distorting the regression results, I follow a standard procedure of winsorizing all regression variables within the range of 1% to 99% of their respective values. All definitions for the control variables are in 3.5.

### 1.3.4 Hypothesis Development

The collective evidence from the extant research shows that HF activists tend to differ from non-HF activists in several key aspects. At the root of these differences are the incentive structure differences between HF and non-HF managers and the regulatory differences facing these two types of institu-

tions[20]. In the following, I summarize the principal differences between HF activists and non-HF activists, mainly drawing inspirations from a comprehensive law review article by Kahan and Rock [2007].

**First**, HF and non-HF activists tend to have different investment horizons. Hedge funds are often characterized as having short investment horizons, whereas traditional institutional investors, such as pension funds and mutual funds, are characterized as having long investment horizons. Gaspar et al. [2005], studying the impact of shareholder investment horizon on M&A outcomes, find that shareholder investment horizon plays a large role in the success of M&A outcomes. In particular, firms held by short-term investors tend to have a weaker bargaining position in M&As and thus are associated with worse performance attributes, such as higher takeover premiums, lower CARs around the M&A announcements, and higher long-run underperformance. It follows that if hedge fund activists are strictly characterized with short investment horizons, designating 1 year or less, then I should observe that firms that are mainly held by HF activists would underperform firms that are mainly held by non-HF activists, everything else equal, over the long run.

**Second**, HF activism tends to be strategic and ex-ante, whereas non-HF activism tends to be incidental and ex-post. HF activists first evaluate whether a company could benefit from activism before getting actively involved, and hence their position in the targeted companies stem from strategic considerations and their stance is ex ante. On the other hand, non-HF activists periodically sift through their portfolios to identify underperformers or companies with distinguishable governance problems, and then decide whether or not to target these companies. Since HF activism is strategic and ex-ante, it follows that HF activists could use their influence to monitor or even shape some aspects of the M&A deals in line with shareholder value maximization, before the announcements are made public. Consistent with this view, Greenwood and Schor [2009] show that hedge fund activists tend to identify undervalued companies and then use M&As as an exit strategy, rather than fixing the long-term issues of these companies. Non-HF activists, however, don't get actively involved before the M&A announcements; they would only monitor retroactively and / or over the long run.

**Third**, HF activists participate in a wide spectrum of activism campaigns, emcompassing all

[20] non-HF activists face regulatory restrictions, political barriers, or conflicts of interest problem that limit the extent of profits non-HF activists and their managers can make in activism.

matters relating to corporate governance and corporate controls, from the mild form to the most aggressive form. Non-HF activists, however, tend to focus exclusively on the mild form of corporate governance activism. This difference in preference may arise from the fact that HF and non-HF activists have different budget constraints for activism. HF activists, especially those who specialize in shareholder activism, use activism as a key investment strategy, and thus would be willing and able to launch costly and aggressive activism campaigns. Non-HF activists, on the other hand, only rely on activism as a risk-control measure for steering better long-term portfolio returns. Naturally, non-HF activists tend to be more conservative and cost-aware in their considerations for choosing activism tactics. The most commonly used activism tactics for non-HF activists are private negotiations and submitting shareholder proposals, which align well with their objectives and budgetary considerations. Hedge funds tend to use a much boarder set of activism tools, which include, but are not limited to, publicly naming and shaming, proxy fights, litigations, blocking a potential M&A deal, or even taking over companies on their own, or sometimes as a part of a group.

Generally speaking, shareholder activists can create values for their holding-firm shareholders via three channels. First, they could add value through reducing agency costs in their holding firms. Second, they could add values by encouraging policies in order to improve the operational performance of the holding firms. Third, they could identify undervalued and "digestable" targets and then help "flip" them to bigger and more liquid acquirers in order to make profits for themselves and the holding-firm shareholders.

Mergers and acquisitions, embedded with value-creation opportunies through all these three channels, offer an ideal framework to study the extent of value creation by shareholder activists. The empirical work in M&As show that firms inflicted with agency problems tend to pay higher takeover premiums in M&A transactions, use high level of over-valued stock as the medium of payment, and embark on value-destructing M&A deals. While these decisions tend to be harmful to the acquirer shareholders, managements have repeatedly gone after them in pursuit of self-serving objectives. Effective monitoring in acquirers, in this case, should manifest through reduction in takeover premiums, lower percentage of stock financing in takeover premims, and / or an increased probability of deal withdrawal.

This study mobilizes six different metrics to explore the extent of value creations by HF activists and non-HF activists. Three of these metrics are performance-based measures: announcement-window CARs, BHARs, and operating performance, as proxied by 1-year industry-adjusted post-announcement ROA. The other three metrics are proxies for various types of agency problems: actual offer premium, percentage of stock financing, and deal status. Additionally, I also ran regression analysis on deal attitude to examine empirically whether HF involvements are necessarily associated with more hostile deals. All seven variables are studied subsequently via graphical presentations and / or regression analysis in an effort to examine the extend of impacts HF and non-HF activists have on M&A transactions. The null hypothesis posits that activist involvement, by both HF activists and non-HF activists, play no role in the market for corporate control.

I lay out the working hypotheses and their predictions below.

**i. Actual offer premium**

M&A transactions transfer part of the acquirer shareholders' wealth to target shareholders through takeover premiums. High takeover premiums are especially common in cash tender offers, contested M&A deals, or takeovers driven by management's empire-building motives. While high takeover premiums benefit target shareholders, they expropriate wealth from acquirers and hence generate negative wealth effect to acquirer shareholders. I therefore expect that shareholder activists of acquirers should aim to lower takeover premiums through monitoring. In this paper, actual offer premium is measured as [(bidder's offer / target's pre-bid market value of equity) - 1][21].

**[TESTABLE_HYPOTHESIS_#1]:** Activist involvements would be associated with lower takeover premiums.

**ii. Announcement-window Acquirer CARs**

If the stock market is efficient, as predicted by the efficient market hypothesis (EMH), all the publicly available information pertaining to a corporate event should have been immediately integrated into the stock price of this company. Based on this assumption, event studies use cumulative abnormal returns (or CARs) to gauge the aggregate stock market response toward a certain corporate event,

[21] Gaspar et al. [2005]

measured over a pre-specified short-term event window. If the event-window stock CARs are positive, then it suggests that, at the aggregate level, the market believes that this event creates values for the shareholders; otherwise, it is a proxy that the market believes that the event destroys value for the shareholders. In the context of mergers and acquisitions, the finance literature has documented that M&A transactions are often associated with positive CARs for targets and non-positive CARs for acquirers. Since this paper focuses on studying the impact of activist involvements on M&A acquirers, I expect that effective monitors of acquirers should be associated with positive marginal acquirer CARs.

**[TESTABLE_HYPOTHESIS_#2]:** Activist involvements in acquirers should be positively associated with acquirer CARs.

### iii. Buy-and-hold abnormal stock returns (BHAR)

Buy-and-hold abnormal stock returns is a commonly used metric to proxy for long-term value-creation in event studies. This paper follows the control-firm matching approach recommended by Lyon et al. [1999] in computing buy-and-hold abnormal returns, whereby the control firms are selected on the basis of 'firm size' and 'market-to-book ratio'[22]. Gaspar et al. [2005] show that acquirers held by short-term shareholders experience higher long-run underperformance, because weaker monitoring from short-term shareholders could allow managers to proceed with value-reducing acquisitions or to bargain for personal benefits at the expense of shareholder returns. If hedge fund activists are really short-term in nature and would not monitor over the long run[23], as many critics speculate, acquirers held by HF activists should be associated with lower BHARs. On the other hand, if hedge fund activists are not as short-term focused and will monitor over the long run, then acquirers held by HF activists should be associated with higher BHARs. In this paper, long run is defined as one-year post-announcement period[24]. Since the previous papers, based on Schedule 13D filings, found that HF activism is associated with positive long-term stock returns[25], I expect to find that HF activist involvements in acquirers are associated with higher long-term performance of acquirers, even though the underlying data source is different.

[22] For details on the matching procedure, see Lyon et al. [1999].

[23] The definitions of what constitute "long-term" have varied from one year to five years.

[24] This is based on the findings of previous empirical methodology papers that suggest the cause and effect become more uncertain as the investment horizon under analysis lengthens.

[25] Brav et al. [2008], Clifford [2008], Klein and Zur [2009], Greenwood and Schor [2009]

**[TESTABLE_HYPOTHESIS_#3]:** Activist involvements in acquirers are associated with higher BHARs.

**iv. Long-horizon operating performance**

In addition to using the event-study method to study the extent of value creation for shareholders, this study also mobilize accounting analysis to examine whether activist involvements manage to improve the operating performance of acquirers. Since operating performance of a given firm is largely influenced by the overall climate of their industry, I adjust the industry effect by subtracting the industry-average ROA from the individual-firm ROA. To identify each industry group, I used the Fama and French 48 industry portfolios. If shareholder activists are successful at monitoring, then I expect the relationship between industry-adjusted ROA and activist holding variables are positive, indicating higher level of monitoring is associated with higher industry-adjusted ROA.

**[TESTABLE_HYPOTHESIS_#4]:** Activist-involvements by both HF activists and non-HF activists are associated with higher long-horizon operating performance.

**v. Percentage of stock financing**

The financing decision in mergers and acquisitions, namely, whether the deal is financed by cash, stock, or a mixture of both, is related to the capital structure of acquirer firms. The pecking order theory, popularized by Myers and Majluf [1984], postulates that the cost of financing increases with asymmetric information. Thus, when it comes to financing corporate projects, the natural order should be internal financing through cash preferred to external financing through debt, and then equity as the last resort. Since equity is the least preferred means of financing, when managers (who tend to have superior information of the firm, compared to outside investors) use stock as means of payment, investors take it as evidence that managers are exploiting the over-valuation of stock and hence place a lower value to equity-financed projects. The market timing hypothesis, a competing theory on capital structure decisions, proposed by Baker and Wurgler [2002], also indicates that equity financing is the preferred means of financing, only when equity is over-valued. Numerous previous papers studying stock financing in M&As found strong evidence showing that higher level of stock financing in M&As is

associated with lower stock returns for both acquirers and targets[26]. Based on the collective evidence, I expect that the level of stock financing is negatively associated with activist involvements by both HF activists and non-HF activists in mergers and acquisitions, given effective monitoring by these two groups of shareholder activists.

**[TESTABLE_HYPOTHESIS_#5]:** The percentage of stock financing is negatively associated with activist involvements by both HF activists and non-HF activists in mergers and acquisitions, given effective monitoring by these two groups of shareholder activists.

**vi. Deal attitude**

HF activists are known to have a hostile disposition in their activism efforts[27]. Brav et al. [2008], for instance, show that roughly 62% of hedge fund activism cases involve some kind of hostile tactics. Meanwhile, HF activists are not always hostile. In most cases, they hope the management of target firms would be receptive to their value-creating proposals, and would only become hostile if hostility is only way to warrant a satisfying result. In contrast, non-HF activists very rarely become hostile in public. The only non-HF activism program known to have an air of hostility is CalPERS' Focus List program[28], but it is dropped in 2010. Thus, based on the current knowledge of shareholder activism, I expect to see empirically that HF activism is associated with more instances of hostillity than non-HF activism.

**[TESTABLE_HYPOTHESIS_#6]:** HF activist involvements in acquirers are associated with higher probability of hostile deals, while non-HF activist involvements in acquirers are not associated with higher probability of hostile deals.

**vii. Deal completion status (agency cost)**

A repeatedly tested question in M&A literature is whether takeovers create value for acquirer shareholders. Most event studies found negative or zero stock CARs for acquirers during the short-term

[26] Amihud et al. [1990], Martin [1996], Heron and Lie [2002], Faccio and Masulis [2005]
[27] Brav et al. [2008], Greenwood and Schor [2009]
[28] The Focus List program uses a public naming-and-shaming approach to urge managements of their targeted firms to enhance shareholder values.

announcement windows, indicating that takeovers on average don't create value for acquirer shareholders. An important question arises, then: Why do acquirers launch takeovers at the first place. A well-entertained hypothesis is that management of bidder firms acquire out of self-serving motives, such as empire-building and hubris, at the cost of shareholder's wealth. Based on this assumption, I expect that the involvements of HF activists in acquirers should increase the likelihood of deal withdrawal, whereas non-HF activists should decrease the likelihood of deal withdrawal.

**[TESTABLE_HYPOTHESIS_#7]:** The involvements of HF activists in acquirers should increase the likelihood of deal withdrawal, whereas non-HF activists should decrease the likelihood of deal withdrawal.

## 1.4 Interpretation and Analysis

### 1.4.1 Comparison of activist holdings

Table 1.1 (Panel A) presents an overview of the aggregate USD holdings in acquirers (in Billion USD) by year. This table is calculated by summing the year-end quarterly USD holdings of all matched HF activists and non-HF activists with ownership in acquirers. The result shows that the amount of combined investments in acquirers held by non-HF activists greatly surpassed that by HF activists. However, the gap appears to be shrinking over the years, as the combined holdings by non-HF activists in acquirers seem to follow a downward trending pattern.

Table 1.1 (Panel B) presents the summary statistics of percentage ownership associated with the two groups of activist investors in acquirers by year. To create this table, I first extracted only the last-quarter-of-each-year activist holding information, given available, for each activist for each year, and then compute the summary statistics across all investors in each year. Column 2 (Max) and column 3 (Mean) of the table show that HF activists tend to take a much larger percentage stake in acquirers, as comparing to non-HF activists (column 8 & column 9). Over the years, HF activists also tend to have a higher median percentage ownership in acquirers (column 4 v. column 10). Column 5 and column 11 present the standard deviation of percentage ownership of HF activists and non-HF

Table 1.1: Percentage Holding By Activist Type

**PANEL (A)** **Aggregate USD Holding in Acquirers (in Billion USD) By Year**

| Year | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HF Activists | 26.65 | 7.27 | 5.88 | 4.94 | 8.40 | 19.19 | 23.18 | 42.03 | 26.29 | 13.29 | 22.18 | 19.07 | 15.51 | 11.74 |
| non-HF Activists | 236 | 98.79 | 69.16 | 53.68 | 76.90 | 102.23 | 80.14 | 92.36 | 84.51 | 57.15 | 66.24 | 36.99 | 43.53 | 41.11 |

**PANEL (B)** **Percentage Ownership in Acquirers By Year**

| | HF Activists | | | | | | non-HF Activists | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Min | Max | Mean | Median | SD | Count | Min | Max | Mean | Median | SD | Count |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| 1999 | 0.00% | 9.83% | 0.82% | 0.19% | 2.26% | 34 | 0.00% | 0.60% | 0.32% | 0.41% | 0.22% | 10 |
| 2000 | 0.00% | 4.11% | 0.50% | 0.15% | 0.91% | 34 | 0.00% | 0.62% | 0.30% | 0.24% | 0.22% | 11 |
| 2001 | 0.00% | 13.44% | 0.29% | 0.29% | 2.32% | 44 | 0.00% | 0.98% | 0.36% | 0.35% | 0.29% | 11 |
| 2002 | 0.00% | 6.98% | 0.77% | 0.17% | 1.40% | 48 | 0.02% | 1.16% | 0.45% | 0.37% | 0.31% | 11 |
| 2003 | 0.00% | 11.24% | 1.13% | 0.31% | 2.19% | 59 | 0.01% | 1.01% | 0.34% | 0.30% | 0.30% | 11 |
| 2004 | 0.00% | 28.62% | 1.82% | 0.44% | 4.15% | 65 | 0.01% | 0.70% | 0.28% | 0.22% | 0.23% | 11 |
| 2005 | 0.00% | 45.63% | 2.08% | 0.55% | 5.79% | 71 | 0.01% | 0.72% | 0.29% | 0.30% | 0.21% | 10 |
| 2006 | 0.00% | 89.97% | 2.66% | 0.42% | 11.35% | 84 | 0.00% | 0.74% | 0.31% | 0.31% | 0.25% | 10 |
| 2007 | 0.00% | 16.01% | 1.52% | 0.47% | 2.83% | 89 | 0.01% | 0.71% | 0.29% | 0.23% | 0.25% | 10 |
| 2008 | 0.00% | 15.49% | 1.46% | 0.35% | 2.67% | 93 | 0.03% | 0.71% | 0.29% | 0.16% | 0.26% | 10 |
| 2009 | 0.00% | 91.96% | 2.34% | 0.30% | 10.00% | 92 | 0.00% | 0.64% | 0.27% | 0.23% | 0.21% | 10 |
| 2010 | 0.00% | 46.70% | 1.49% | 0.23% | 5.29% | 87 | 0.01% | 0.81% | 0.28% | 0.22% | 0.26% | 10 |
| 2011 | 0.00% | 92.60% | 1.92% | 0.17% | 10.44% | 79 | 0.00% | 0.56% | 0.20% | 0.18% | 0.17% | 12 |
| 2012 | 0.00% | 7.93% | 0.76% | 0.15% | 1.51% | 66 | 0.00% | 0.56% | 0.21% | 0.18% | 0.17% | 12 |

activists. These two columns show that percentage ownership of acquirers associated with non-HF activists tend to be very even (small SD), whereas those associated with HF activists tend to vary by a large degree (large SD). This result is expected, as it is well known that most of pension funds use indexing for their widely diversified equity portfolios, whereby HF activists tend to focus most of their capital in firm-specific engagements. Additionally, column 6 and column 12 show how many activists of each category invest in M&A acquirers each years. Column 6 suggests that over the years an increasing number of HF activists have joined the fray of shareholder activism via M&As, but the number of non-HF activists involved in M&A acquirers stayed fairly consistent.

Together, Table 1.1 shows that while non-HF activists have a much bigger total investments in acquirers, HF activists tend to have a bigger percentage ownership in acquirers at individual firm level. This result makes sense, since non-HF activists have more assets under management (AUM) than HF activists. It is also consistent with previous findings that hedge funds engage more in activism than do traditional institutions on the per-deal basis, also corroborating the assertion that activism by hedge funds is strategic and activism by traditional institutions is incidental (Kahan and Rock [2009]; Brav et al. [2010]).

Table 1.2: Summary Statistics (HF Activists v. Non-HF Activists)

| Investor Category | Time Period | M&A Deal Count# | Percentage Ownership in Acquirers | | | Avg Churn Rate |
|---|---|---|---|---|---|---|
| | | | Mean | Median | StDev | |
| Activists (All) | 2000 - 2012 | 748 | 3.8% | 2.1% | 0.06 | 0.31 |
| Hedge-fund Activists | 2000 - 2012 | 451 | 4.7% | 2.8% | 0.06 | 0.34 |
| Non-Hedge Fund Activists | 2000 - 2012 | 348 | 2.2% | 0.8% | 0.04 | 0.14 |
| Non-Activists | 2000 - 2012 | 2532 | 3.2% | 2.5% | 0.03 | 0.23 |

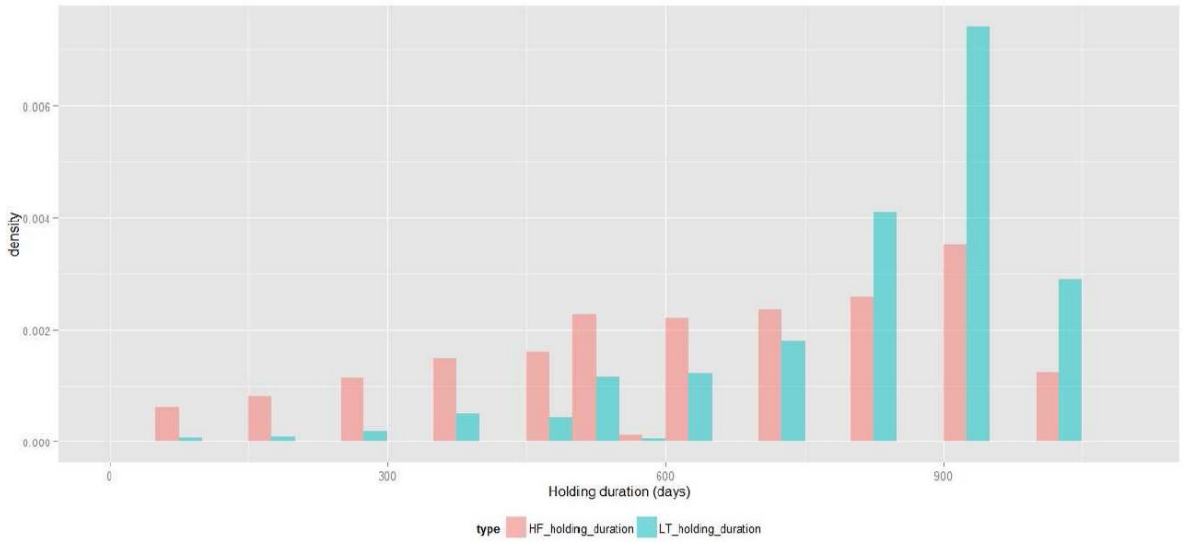
### 1.4.2 Investment horizon

Table 1.1 shows how HF activist holdings and non-HF activist holdings vary each year. Table 1.2 presents how activist holdings compare during the period from 2000 to 2012; furthermore, how their respective churn rates compare during this period. Consistent with the results from Table 1.1, this table shows that HF activists tend to have a higher percentage ownership in acquirers, based on the mean and median statistics. The last column shows average churn rates, which can be used to proxy for the length of investor investment horizon, of different groups of investors. Churn rate is a portfolio-based measure of how frequently an investor rotates his positions on all the stocks of his portfolio. Short-term investors tend to be associated with faster churn rates, while long-term investors tend to be associated with slower churn rates.

A popular critique is that HF activism tends to be short-term in nature. To examine whether HF activists generally have a short-term horizon, I calculated the average churn rate of HF activists and non-HF activists, based on their holdings in acquirers. The result shows that HF activists have an average churn rate of 0.34, while non-HF activists have an average churn rate of 0.14. This result confirms that, on average, HF activists have a shorter investment horizon than non-HF activists.

Table 1.2 demonstrates that HF activists have, on average, a faster churn rate than non-HF activists, implying HF activists have, on average, shorter investment horizons than non-HF activists. However, the differences are in holding durations between HF activists and non-HF activists are still unclear. Figure 1.1 plots the distributions of holding durations of all matched HF and non-HF activists in a histogram. This plot illustrates that the holding periods of non-HF activists are largely clustering on the right end of the histogram between 800 and 1000 days. On the other hand, the holding periods of HF activists are more evenly distributed. Although as a whole they appear to be more short-term

Figure 1.1: Histogram of Holding Durations (HF v. Non-HF)




focused relative to non-HF activists, the histogram doesn't show that HF activists are short-term focused. To explore the extent of alleged short-termism of HF activists further, I created Table 1.3, which breaks down holding durations of HF and non-HF activists in terms of ex-ante holding duration and ex-post holding duration and is organized by four different M&A deal types.

Ex-ante duration is calculated as the number of days between the 1st 13f filing date[29] and the M&A announcement date for each activist investor recorded in the 13f database. The negative sign for the ex-ante day differences refers to the fact that the 1st 13f filing date comes before the M&A announcement date for each activist investor. Ex-post duration is calculated as the number of days between the M&A announcement date and the last 13f filing date[30] for each activist investor in the 13f database. Since the 13f database for institutional holding data and the SDC spectrum database for M&A transaction data are both quite massive, I picked 542 days before and after M&A announcement dates as the arbitrary cutoff points for merging the two database. Thus, the longest ex-ante holding duration is limited to 542 days before M&A announcement dates for each investor, and the longest ex-post holding duration is limited to 542 days after M&A announcement dates for each investor. The longest possible holding duration for each investor is thus restricted to 1084 days, centering around

[29] More specifically, it is referred to the 1st 13f filing date after 542 days prior to the M&A announcement date.
[30] More specifically, it is referred to the last 13f filing date before 542 days prior to the M&A announcement date.

Table 1.3: Holding periods (HF v. non-HF)

| | HF Activists | | | non-HF Activists | | |
|---|---|---|---|---|---|---|
| Deal Type | avg ex-ante daydiff | avg ex-post daydiff | avg hldg duration | avg ex-ante daydiff | avg ex-post daydiff | avg hldg duration |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Completed | -321.56 | 321.18 | 642.74 | -387.11 | 428.15 | 815.26 |
| Withdrawn | -299.79 | 339.51 | 639.30 | -378.45 | 437.49 | 815.94 |
| Friendly | -320.42 | 321.83 | 642.25 | -386.47 | 428.32 | 814.80 |
| Hostile | -286.94 | 370.11 | 657.05 | -409.22 | 461.60 | 870.81 |

the announcement dates.

The table shows that, on average, HF activists would hold acquirer stocks for a little less than a year before the acquirers make public their intentions to merge or acquire, whereas non-HF activists on average would have owned the acquirer stocks for more than a year before the M&A announcements take place. After the M&A announcements, HF activists would continue to hold the acquirer stocks for a little less than a year before they exit (except for the hostile takeover scenario). Non-HF activists, on the other hand, would continue to hold the acquirer stocks for more than a year. This pattern holds, except for the ex-post duration for HF activists in the hostile takeover scenario., irrespective of the M&A deal status (completed vs. withdrawn) and deal attitude (friendly vs. hostile). Therefore, consistent with results from Table 1.2 and Figure 1.1, HF activists appear to have a shorter holding period of acquirer stocks, relative to non-HF activists, but the holding durations of HF activists don't appear to be especially short-term, as suggested by critics of HF activism.

Taken as a whole the evidence from Table 1.2, Figure 1.1, and Table 1.3, I conclude that HF activists are not particularly short-term focused. Thus, the criticism alleging that HF activism is characterised with shortermism is weak.

Clifford [2008] find that activist blockholders tend to cluster in certain industries. Particularly, hedge fund activists tend to have high levels of specialization in certain industries. To investigate this claim in the context of mergers and acquisitions, I tabulate industry groups associated with both HF activist holdings and non-HF activist holdings in acquirer and target firms in Table 1.4. Panel A ranks Fama-French 48 industries by the percentage of activist involvement (HF vs. non-HF activists). For example, column 2 and column 3 of Panel A jointly show that 77.78% of HF activists invest in the 'Business Services' industry, while only 5.98% of HF activists invest in the 'Textiles' industry. The

rank statistics are calculated based on the number of activists in each category out of the total number of activists in this category. Panel B ranks Fama-French 48 industries by the number of M&A deals in each industry that has the presence of either HF or non-HF activist holdings. For instance, most deals associated with HF activist holdings take place in the 'Business Services' industry, whereas the smallest number of deals associated with HF activist holdings take place in the 'Textiles' industry. The rank statistics are calculated by using the number of M&A deals in each industry that exist certain type of activist holdings out of the total number of M&A deals that exist this type of activist holdings.

While Panel A shows the industries where activist investors are most and least concentrated, Panel B shows the industries that are most and least likely to have M&As take place. If activist investors don't have particular industry preferences and simply invest in acquirers or targets to enhance shareholder returns, then the industry rank of Panel A and Panel B in the corresponding columns should fall into perfect alignment. If an industry, within the top 5 industries in Panel A, ranks higher than its corresponding rank in Panel B, then it's evidence that activists are especially active in this industry, because these investment choices are not driven by M&A activities. These especially-popular industries are colored blue in Panel A.

The distance between the percentage of activist involvement in the top 5 industries and that in the bottom 5 industries is much greater for HF activists than for non-HF activists. This implies that HF-activist holdings are more concentrated, relative to non-HF activist holdings, which appear to be more evenly distributed across all industries. This result is consistent with Clifford [2008], in that HF activist holdings appear to cluster in certain industries. Additionally, panel A also shows that non-HF activists seem to be slightly more interested in traditional industries that have high barrier to entry and are not consolidated as fast, such as utilities, steel works etc., and insurance.

To examine to what extent HF activists and non-HF activists invest in the same acquirers, I plotted the following Venn diagram. The Venn diagram shows that HF activists and non-HF activists invest in 3,841 common acquirers, out of 4,127 acquirers that HF activists invested in and 4,423 acquirers that non-HF activists invested in. This means that 93% of HF-activist-invested acquirers in my sample have stock holdings by non-HF activists. Additionally, 87% of non-HF-activist-invested acquirers in my sample also have HF activists holdings. This result shows that HF activists and non-HF activists

Table 1.4: Industry Groupings by Activists and MA Deal Counts

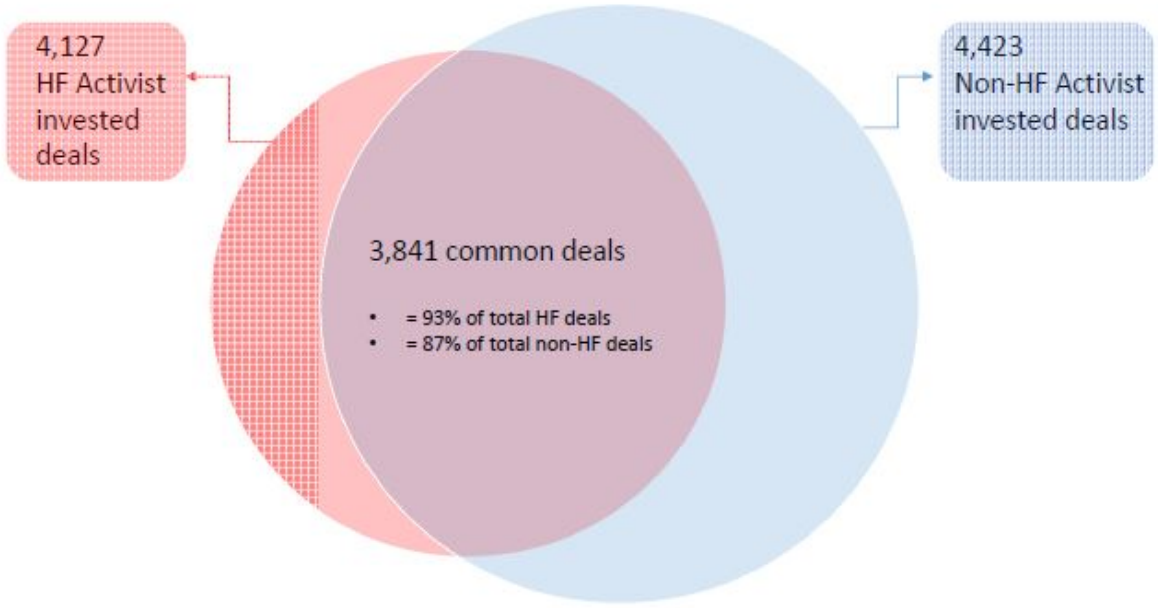
**Panel A: Most Popular and Least Popular Industries by Activist Groups**

| | Acquirer Industry Group | | | | | Target Industry Group | | | |
|---|---|---|---|---|---|---|---|---|---|
| Industry Rank | HF Activist Industries | % of HF | Non-HF Activist Industries | % of non-HF | HF Activist Industries | % of HF | Non-HF Activist Industries | % of non-HF |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1 | Business Services | 77.78% | Pharmaceutical Products | 100.00% | Business Services | 68.81% | Business Services | 92.86% |
| 2 | Computers | 67.52% | Computers | 100.00% | Petroleum and Natural Gas | 54.13% | Trading | 92.86% |
| 3 | Pharmaceutical Products | 64.10% | Medical Equipment | 100.00% | Banking | 53.21% | Petroleum and Natural Gas | 92.86% |
| 4 | Electronic Equipment | 63.25% | Utilities | 100.00% | Retail | 51.38% | Utilities | 92.86% |
| 5 | Banking | 62.39% | Steel Works Etc | 100.00% | Pharmaceutical Products | 49.54% | Insurance | 92.86% |
| 44 | Agriculture | 11.97% | Precious Metals | 64.29% | Aircraft | 4.59% | Fabricated Products | 50.00% |
| 45 | Rubber and Plastic Products | 10.26% | Fabricated Products | 57.14% | Beer & Liquor | 2.75% | Defense | 50.00% |
| 46 | Beer & Liquor | 8.55% | Agriculture | 50.00% | Tobacco Products | 2.75% | Tobacco Products | 50.00% |
| 47 | Shipping Containers | 7.69% | Shipping Containers | 50.00% | Shipbuilding, Railroad Equipment | 1.83% | Beer & Liquor | 42.86% |
| 48 | Textiles | 5.98% | Textiles | 42.86% | Precious Metals | 0.92% | Precious Metals | 35.71% |

**Panel B: Most Popular and Least Popular Industries by M&A Activities**

| | Acquirer Industry Group | | | | Target Industry Group | | | |
|---|---|---|---|---|---|---|---|---|
| Industry Rank | HF Activist Industries | % of M&A Deals | Non-HF Activist Industries | % of M&A Deals | HF Activist Industries | % of M&A Deals | Non-HF Activist Industries | % of M&A Deals |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1 | Business Services | 18.43% | Business Services | 18.31% | Business Services | 20.15% | Business Services | 20.27% |
| 2 | Banking | 14.01% | Banking | 16.80% | Banking | 8.67% | Banking | 10.54% |
| 3 | Electronic Equipment | 8.10% | Electronic Equipment | 8.08% | Pharmaceutical Products | 6.24% | Electronic Equipment | 6.73% |
| 4 | Trading | 6.17% | Pharmaceutical Products | 6.02% | Trading | 6.24% | Trading | 6.33% |
| 5 | Computers | 6.14% | Computers | 5.72% | Electronic Equipment | 5.92% | Pharmaceutical Products | 5.73% |
| 44 | Precious Metals | 0.12% | Beer & Liquor | 0.09% | Aircraft | 0.11% | Beer & Liquor | 0.16% |
| 45 | Agriculture | 0.10% | Agriculture | 0.09% | Beer & Liquor | 0.11% | Precious Metals | 0.12% |
| 46 | Beer & Liquor | 0.10% | Textiles | 0.09% | Shipbuilding, Railroad Equipment | 0.11% | Aircraft | 0.08% |
| 47 | Shipping Containers | 0.05% | Precious Metals | 0.07% | Tobacco Products | 0.05% | Non-Metallic & Metal Mining | 0.08% |
| 48 | Textiles | 0.05% | Shipping Containers | 0.07% | Precious Metals | 0.05% | Tobacco Products | 0.04% |

Figure 1.2: Venn Diagram




significantly overlap when it comes to finding potential target candidates.

The Venn diagram shows that HF activists and non-HF activists tend to have big overlap in M&A acquirers. This suggests that HF activists and non-HF activists might use similar set of filters when it comes to selecting firms to target. Hence, comparing firm characteristics associated with the companies to which HF activists and non-HF activists have holdings would be interesting. The next section compares a selection of accounting measures associated with HF-activist-invested acquirers, non-HF-activist-invested acquirers, and contrast them with the same accounting measures of the COMPUSTAT universe.

### 1.4.3 Firm characteristics of the targeted firms

The next important question is: what kind of companies do hedge fund activists target? A number of fairly recent papers studying hedge fund activism, based on the information extracted from Schedule 13D, show consistent results that hedge funds tend to target smaller, undervalued, but more profitable

firms, with higher leverage and worse payout policy, than their comparable companies[31]. In contrast, older papers of pension fund activism show that traditional activists tend to target bigger, poorly performing companies with serious operational difficulties[32]. Hence, the collective evidence suggest that HF activists and traditional activists tend to have different targeting patterns. In particular, HF activists are more likely to target profitable firms with symptom of agency problem of free cash flow according to Jensen [1986], whereas traditional activists are drawn to struggling companies with underperforming stock prices and operational difficulties. Yet, one overlapping attribute stands out between firms targeted by both groups of activists. That is, all the targeted firms appear to be significantly undervalued.

Drawing inspirations from the collective evidence based on former studies, this section explores how firm characteristics of the M&A acquirers compare, should these acquirers have holdings by HF and non-HF activists. Figure 1.3 compares firm size and financial distress levels of acquirers with holdings by HF activists and non-HF activists. Size is proxied by market value of assets (MVA) and market value of equity (MEQ). Altman's Z score is a proxy for financial distress, where a score below 1.8 usually means that the company is severely distressed and is probably headed for bankruptcy, while a score over 3.0 symbolizes sound credit strengh of the company. Debt-to-Asset ratio is an indicator for financial leverage and thus a higher ratio is associated with higher degree of leverage, and consequently higher financial risk. Based on the first plot, market value of the firms targeted by HF activists fall into 2 billion to 10 billion dollars range, and thus are small-cap to mid-cap firms, where market value of the firms targeted by non-HF activists are mostly in the 5 billion to 25 billion dollars range, and hence are mid-cap to large-cap firms. This finding is consistent with the recent studies of HF activism that suggest HF activists tend to target smaller companies relative to traditional activists. The second and third plots show that acquirer firms targeted by HF and non-HF activists have very similar leverage profiles. More specifically, they have very similar Altman's Z scores and financial leverage ratios (i.e., d2a), suggesting that, on average, acquirers with HF and non-HF activist holdings tend to be distressed companies with relative low financial leverages, as comparing to an average COMPUSTAT firm.

[31] Klein and Zur [2009], Brav et al. [2010]
[32] Del Guercio and Hawkins [1999], Woidtke [2002]

Figure 1.3: Size & Financial Stress Measures (HF v. non-HF)


#### 1.4.3.1 Financial stress measures

Figure 1.4 compares the valuation measures of the acquirer firms targeted by HF and non-HF activists. The first three plots (a, b, c) show that acquirer firms targeted by HF activists and non-HF activists tend to have lower valuations as comparing to the COMPUSTAT universe, based on market-to-book ratios, Tobin's Q, and return on assets, indicating that the acquirer firms are undervalued relative to an average firm in the COMPUSTAT universe. This finding is consistent with the evidence from the previous papers suggesting that HF and non-HF activists tend to target undervalued firms. The next

three plots (d, e, f) illustrate the profitability measures (ROA, profitability, and FCF) of the acquirer firms with holdings by HF and non-HF activists, relative to an average firm in the COMPUSTAT universe. The plots show that the acquirers held by HF and non-HF activists are marginally profitable with positive free cash flows. Altogether, Figure 1.4 shows that the acquirer firms with holdings by HF and non-HF activists tend to be undervalued and marginally profitable firms with positive free cash flows (FCF). Again, this finding corroborates with the findings of previous papers on HF activism.

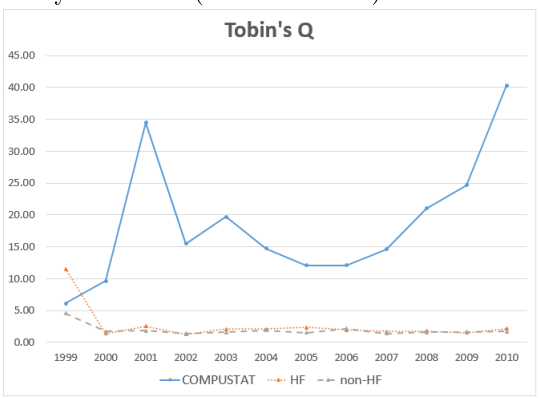
Jointly, Figure 1.3 and Figure 1.4 show that acquirers with holdings by HF activists and non-HF activists share more similarities than differences. The most visible distinction between acquirers held by HF-activists versus those held by non-HF activists seem to be that acquirers held by non-HF activists appear to be larger in size. Other than that, the targeted acquirers share very similar characteristics, in that they appear to be financially distressed, undervalued, but are still marginally profitable nonetheless. While Figure 1.3 and 1.4 are generated based on characteristics of acquirer firms, plots generated based on characteristics of target firms show very similar results. Hence, plots of target-firm characteristics are not presented in this paper.

Since Figure 1.3 and 1.4 show that HF activists and non-HF activists tend to target very similar firms, exploring how the wealth of the two types of activists change during their holding periods would be interesting. Table 1.5 reports wealth change in acquirers for these two types of activist investors. Wealth change is computed as the difference between the USD holding from the earliest 13f filing within 542 days prior to the M&A announcement dates and the USD holding from the latest 13f filing within 542 days after the M&A announcement dates for a given acquirer. USD holding is computed as shares held times share price, as reported in the 13f database.

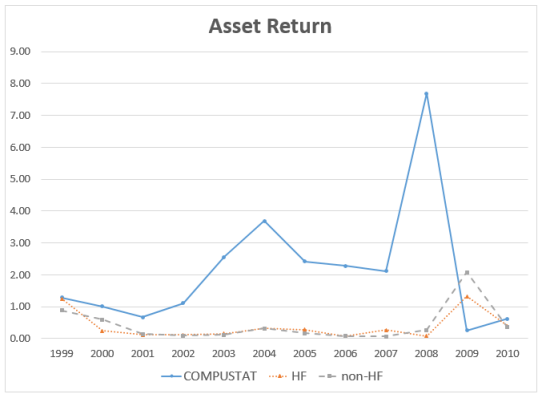
Apparent from column (4) in Table 1.5, HF activists have, on average, a positive wealth change in acquirers during their estimated holding periods, and this is true across all deal types. Non-HF activists, on the other hand, experience a negative wealth change in acquirers during their estimated holding periods, and this is also true across all deal types (column 4). Additionally, based on the mean statistics (column 4), HF activists appear to gain more from hostile deals that were eventually withdrawn, whereas non-HF activists appear to lose less from friendly deals that were eventually consummated. Hence, this result suggests that involvements in acquirers by HF and non-HF activists

Figure 1.4: Valuations & Profitability Measures (HF v. non-HF)

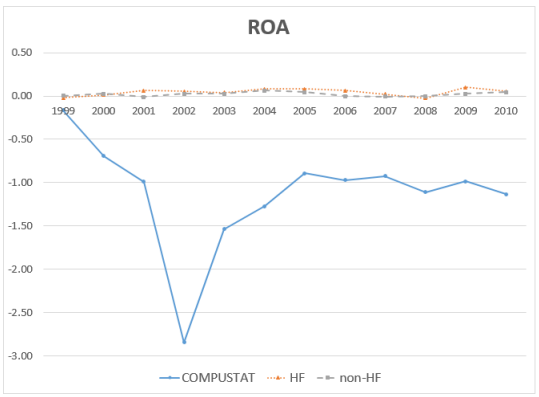

(a)



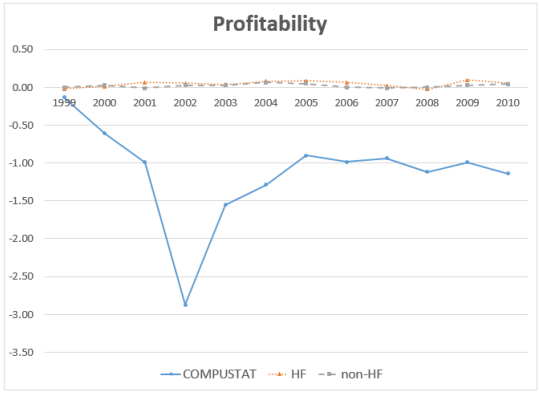

(b)



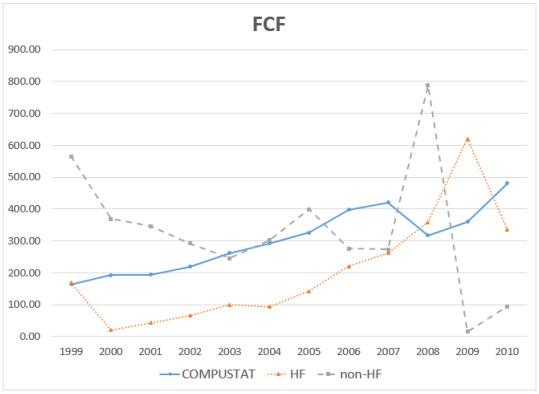

(c)




(d)




(e)




(f)

Table 1.5: Total Wealth Change (HF v. non-HF)

HF Wealth Change in Acquirers

| Deal Type | MIN | MAX | MEAN | MEDIAN | SD | Count | Pos Wealth % |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Completed | (5,692,553,239) | 1,354,219,859 | 1,853,124 | 98,396 | 80,345,318 | 7,880 | 55.32% |
| Withdrawn | (624,224,878) | 4,045,589,718 | 9,224,572 | (73,721) | 200,454,673 | 719 | 46.31% |
| Friendly | (5,692,553,239) | 4,045,589,718 | 2,331,534 | 82,532 | 96,334,075 | 8,406 | 54.71% |
| Hostile | (164,329,614) | 1,145,084,468 | 12,759,110 | 15,608 | 107,612,347 | 147 | 51.70% |

non-HF Wealth Change in Acquirers

| Deal Type | MIN | MAX | MEAN | MEDIAN | SD | Count | Pos Wealth % |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Completed | (4,795,915,723) | 1,769,583,684 | (222,283) | 284,086 | 92,354,884 | 18,146 | 57.81% |
| Withdrawn | (1,500,198,556) | 401,597,053 | (5,533,861) | (61,084) | 69,113,354 | 1,024 | 46.97% |
| Friendly | (4,795,915,723) | 1,769,583,684 | (481,203) | 254,595 | 91,828,873 | 18,906 | 57.31% |
| Hostile | (211,867,091) | 95,615,312 | (900,926) | 430,087 | 32,003,709 | 181 | 54.14% |

* Count is the total number of activism instances. Each <M&A deal, investor> combination defines one activism instance. Two different M&A deals with the same activist investor are counted as two separate activism instances. Also, the same M&A deals with two different activists are counted as two separate activism instances.

might influence deal attitude (friendly v. hostile) and deal completion status (completed v. withdrawn) in different directions.

#### 1.4.3.2 Find matching firms

To yield well-specified test statistics in the subsequent event study analysis, I use the control firm approach, recommended by Barber and Lyon [1997], to find matching control firms for sample firms. Matching control firm for each sample firm (acquirer or target) is assigned from the same year, same industry (based on the three-digit SIC), and same 10x10 Fama-French size and book-to-market sorted portfolios. The first three columns in Table 1.6 present the summary statistics of acquirers or targets in the fiscal year before they are targeted. To see how the acquirers and the targets compare to their industry/size/book-to-market matched peers, the differences are reported in the next three columns.

Table 1.6: Ex-Ante Characteristics of Targeted Companies

| | Acquirer - Summary Statistics | | | Acquirer - Difference with Matched Firms | | |
|---|---|---|---|---|---|---|
| | Mean | Median | SD | Avg.Diff | p-value | Significance |
| Firm Characteristics | (1) | (2) | (3) | (4) | (5) | (6) |
| MVA | 15,910.23 | 1,247.50 | 58,721.84 | 788.93 | 0.60 | |
| meq | 12,052.76 | 1,022.57 | 38,251.98 | 2,267.71 | 0.01 | ** |
| Market Cap | 11,916.34 | 999.18 | 37,897.09 | 2,182.66 | 0.01 | ** |
| Market-to-Book | 2.31 | 1.24 | 4.49 | -0.03 | 0.81 | |
| P/E ratio | 21.85 | 16.72 | 195.66 | 0.17 | 0.78 | |
| q | 2.99 | 1.51 | 6.01 | 0.03 | 0.83 | |
| FCF | 744.30 | 54.63 | 2,645.14 | 48.42 | 0.62 | |
| ROA | 0.07 | 0.08 | 0.17 | 0.00 | 0.53 | |
| AT return | 0.36 | 0.11 | 1.63 | 0.09 | 0.01 | *** |
| Profitability | 0.07 | 0.08 | 0.17 | -0.01 | 0.24 | |
| Sale's Growth | 0.33 | 0.14 | 1.20 | -0.04 | 0.28 | |
| Altman's Z score | 0.57 | 0.79 | 5.92 | -0.23 | 0.06 | * |
| Leverage1 - d2e | 2.06 | 1.19 | 32.31 | -0.40 | 0.66 | |
| Leverage1 - d2a | 0.17 | 0.14 | 0.17 | -0.01 | 0.09 | * |

| | Target - Summary Statistics | | | Target - Difference with Matched Firms | | |
|---|---|---|---|---|---|---|
| | Mean | Median | SD | Avg.Diff | p-value | Significance |
| Firm Characteristic | (1) | (2) | (3) | (4) | (5) | (6) |
| MVA | 1,992.79 | 265.65 | 11,192.23 | -316.18 | 0.55 | |
| meq | 1,169.57 | 201.08 | 4,707.18 | 10.72 | 0.96 | |
| Market Cap | 1,155.19 | 199.55 | 4,654.61 | 5.75 | 0.97 | |
| Market-to-Book | 1.36 | 0.98 | 1.77 | -0.36 | 0.03 | ** |
| P/E ratio | 7.07 | 11.92 | 157.70 | -6.95 | 0.22 | |
| q | 1.80 | 1.26 | 2.18 | -0.64 | 0.07 | * |
| FCF | 104.85 | 11.58 | 534.25 | -8.74 | 0.76 | |
| ROA | 0.02 | 0.05 | 0.21 | -0.02 | 0.11 | |
| AT return | 0.10 | 0.04 | 0.56 | -0.15 | 0.00 | *** |
| Profitability | 0.02 | 0.05 | 0.21 | -0.02 | 0.11 | |
| Sale's Growth | 0.28 | 0.07 | 2.06 | 0.00 | 0.92 | |
| Altman's Z score | -0.04 | 0.48 | 4.20 | -0.31 | 0.03 | ** |
| Leverage1 - d2e | 3.63 | 0.68 | 24.09 | 2.07 | 0.01 | *** |
| Leverage1 - d2a | 0.18 | 0.12 | 0.20 | 0.00 | 0.57 | |

### 1.4.4 Event study CARs

An event study analysis is designed to assess the impact of a corporate event on the value of its shareholders. Based on the efficient-market hypothesis (EMH), if the stock market is sufficiently efficient, then the new (company-specific) information pertaining to the corporate event should be incorporated into the stock price immediately, upon the public release of the event. In this framework, the extent of wealth creation / destruction associated with a particular corporate event can be captured by abnormal stock returns, which measure the incremental impact of an event on stock returns, after adjusting for the 'normal returns' of the stock[33].

Event study method has been applied extensively in mergers and acquisitions literature to analyze the stock market perception of M&A transaction(s). Short-horizon event studies have frequently relied on cumulative abnormal returns (CARs) of either acquirer or target firms during the event window (i.e., several days prior and after the M&A announcements) to gauge the extent of value impact. Preponderance of papers on M&As have shown that, on average, M&A deals are associated with small but significantly negative CARs for acquirer shareholders, especially if acquirers are large and use all-stock as payment for the target in a takeover proposal[34]. Moreover, the acquirer CARs are usually positive and insignificant in tender offers, contested deals, or when the target is private[35]. On the other hand, target shareholders tend to be the largest beneficiary in a takeover bid. This is, to a large extent, due to the hefty premium often associated with the bid proposal[36].

Figure **1.5** - **1.7** show the graphical presentations of acquirer and target CARs associated with different levels of activist holding and non-activist holding. Figure **1.5** makes no distinction between the different types of activist investors and simply contrasts acquirers / targets with activist holdings (i.e., both HF activists and non-HF activists) with those without activist holding (i.e., both HF activists and non-HF activists). Figure **1.6** divides activist holdings associated with acquirer firms into HF-activist holdings, non-HF activist holdings, and non-activist holdings and compare which type of activist holdings is associated with higher acquirer CAR. Similarly, Figure **1.7** divides activist

[33] Previous papers have used the 'market model', reference index, or control firm approach to estimate 'normal returns'.
[34] Loderer and Martin [1990], Eckbo and Thorburn [2000], Fuller et al. [2002], Officer [2003], Moeller et al. [2005], Bhagat et al. [2004], Song and Walkling [2005], Bargeron et al. [2007], Betton et al. [2007]
[35] Bradley [1980], Betton et al. [2007], Bargeron et al. [2007]
[36] Eckbo and Langohr [1989], Comment and Schwert [1995], Eckbo [2009]

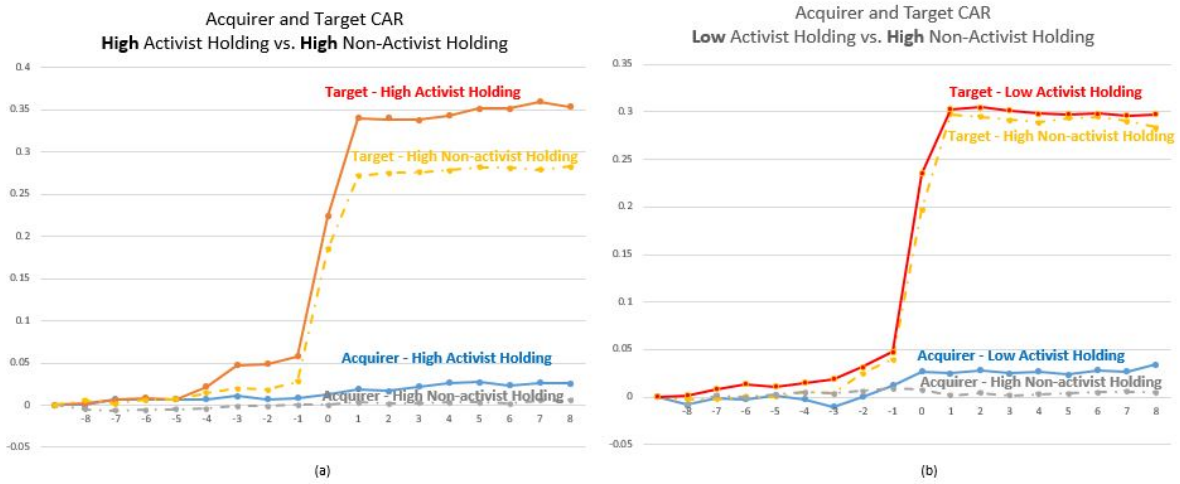
holdings associated with target firms into HF-activist holdings, non-HF activist holdings, and non-activist holdings and see how each type of activist holdings is related to target CAR.

To explore the marginal impact of shareholder investor horizons on mergers and acquisitions, Gaspar et al. [2005] use the event study methods to study the short-term and long-term performance of the merging firms. Similarly, I use the event study methods to examine the marginal effect of activist involvement on the performance of the merging firms. For the short-run analysis, I employ acquirer and target CARs, based on a 3-day event window [-1 : 1], in both graphical presentations and regression analysis. The graphical presentations illuminate how acquirers and targets associated with activist holdings compare with those associated with non-activist holdings (Figure 1.5), and moreover, how acquirers and targets associated with highest level of activist holdings compare with those associated with lowest level of activist holdings (Figure **1.6 & 1.7**). The regression analysis employes the two-stage Heckman model that regresses acquirer CARs on activist involvement variables and a host of control variables in order to identify the marginal impact of activist involvement variables, after correcting for the sample bias that arises from a potentially non-random sample.

Figure 1.5 (a) shows that both acquirers and targets with high activist holdings, defined as the top-quintile percentage holdings of activist investors, tend to outperform those with high non-activist holdings, defined as the top-quintile percentage holdings of non-activist investors. Figure 1.5 (b) shows that even acquirers and targets with low activist holdings, defined as the bottom-quintile percentage holdings of activist investors, tend to overperform those with high non-activist holdings, defined as the top-quintile percentage holdings of activist investors. In overall, Figure 1.5 shows that acquirers and targets with activist holdings appear to outperform those without activist holdings, even acquirers and targets with the lowest-level activist holdings tend to outperform their peers without any activist involvement. This result is consistent with the hypothesis that activists tend to monitor the stock performance of their portfolio companies.

Figure 1.5 show that acquirers and targets with activist holdings tend to be associated with higher CARs, as comparing to acquirers and targets with no activist holdings. To see whether the performance is driven by a particular type of activist investors, I divide the activist holdings into holdings by HF activists and non-HF activists and plot the CARs associated with the two types of activist investors

Figure 1.5: Acquirer and Target CARs (Activist Holding vs. non-Activist Holding)




and non-activist investors. The results are shown in Figure 1.6 and 1.7. Figure 1.6 compares the CARs of three types of investors (i.e., HF activists, non-HF activists, and non-activists) for acquirer firms. Figure 1.7 compares the CARs of the three types of investors (i.e., HF activists, non-HF activists, and non-activists) for target firms. The assumption is that if a particular type of investor monitor successfully, then the portfolio firms with high-level investor holdings should outperform firms associated with low-level holdings, based on CARs over the announcement window.

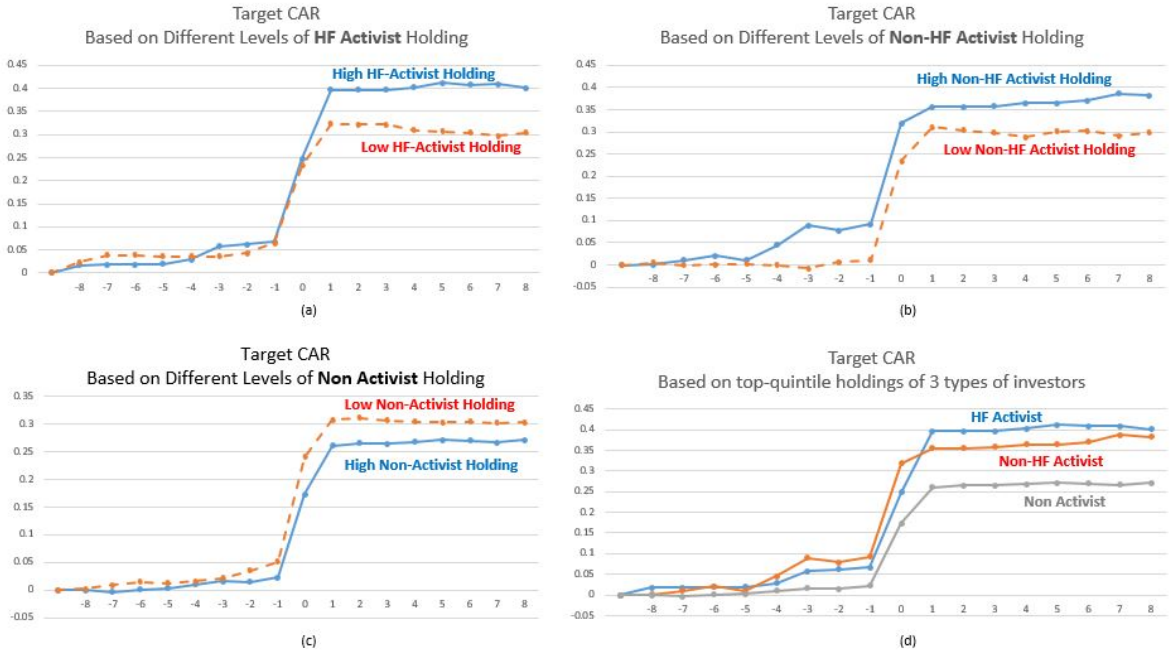
Figure 1.6 (a) compares how acquirers with low HF-activist holdings perform relative to acquirers with high HF-activist holdings. The result shows that acquirers with low HF-activist holdings tend to outperform. This result suggests that HF activists with higher percentage stakes in acquirers do not necessarily exert more monitoring effort relative to HF activists with lower percentage stakes in acquirers. Figure 1.6 (b) compares how acquirers with low non-HF activist holdings perform relative to acquirers with high non-HF activist holdings. The result indicates that acquirers with high non-HF activist holdings tend to outperform acquirers with low non-HF activist holdings. This result is consistent with the hypothesis that non-HF activists monitor. Figure 1.6 (c) shows mixed announcement CARs between acquirers with low non-activist holdings and acquirers with high non-activist holdings, suggesting that non-activists do not exert monitoring efforts on acquirers. The last plot illustrates how acquirer CARs associated with the three groups of investors (i.e., non-HF activist, HF activists,

Figure 1.6: Acquirer CARs (HF Activists v. Non-HF Activists)


non-activists) compare. This plot shows that acquirer CARs associated with high non-HF activist holdings tend to be the highest among the three groups, whereby acquirer CARs associated with high non-activist holdings tend to be the lowest. Moreover, acquirer CARs associated with high HF activist holdings appear to be much lower than that associated with high non-HF activist holdings, but nevertheless, they still appear to be higher than acquirer CARs associated with high non-activist holdings. Together, these plots support the hypothesis that non-HF activist place the most effective monitoring of acquirers.

By a similar token, Figure 1.7 divides investors into three groups (i.e., HF activists, non-HF activists, and non-activist investors) and examine how each group of investors impact on CARs of targets. Plot (a) and (b) show that target CARs associated with top quintiles of HF-activist holdings and non-HF activist holdings tend to outperform target CARs associated with bottom quintiles of HF-activist holdings and non-HF activist holdings. This result is consistent with the hypothesis that activists, both HF activists and non-HF activists, monitor. To keep in perspective the differences between target CARs associated with the three types of investors, the last plot illustrates how target CARs associated

Figure 1.7: Target CARs (HF Activists v. Non-HF Activists)




the the top-quintile holdings of the three groups of investors compare. It shows that targets associated with the top-quintile of HF activist holdings tend to outperform targets associated with the top quintile of non-HF activist holdings, which tend to outperform targets associated with the top-quintile of non-activist holdings. This result suggests that HF activists exert the most effective monitoring efforts with target firms, among the three groups of investors, while non-HF activists is secondary in exerting their monitoring efforts.

In summary, the plots from Figure 1.5 - 1.7 jointly show that the presence of activist holdings is associated with a higher stock CARs for both acquirers and targets, suggesting effective monitoring by activists as a whole (Figure 1.5). Among the two sub-categories of activist investors, non-HF activists appear to be more effective monitors of acquirers (Figure 1.6), while HF activists appear to be more effective monitors of targets (Figure 1.7). Under no circumstances have I observed that holdings by non-activists are associated with higher CARs, indicating that non-activists don't do much monitoring.

Graphical presentation approach illustrates the general trend lines, but regression analysis provides the needed statistical robustness to the results. The section below presents the results of regression

analysis pertaining to testing the marginal impact of the activist involvement variables. To rule out the potential existence of selection bias that arises from a non-random sample, I use the two-stage Heckman model for selection bias correction for acquirer CARs. The first stage is a multinomial probit model of the likelihood of a firm targeted by HF activists. This regression is run on the investor level, as follows:

$$Pr(HF\,activist\,flag = 1|X_{ShareholderVars},\, X_{Controls}) = \Phi(X'\beta)$$

where $HF\,activist\,flag$ is a dummy variable that is equal to 1 if a given investor is a HF activist or 0 if a given investor is a non-HF activist; $X_{ShareholderVars}$ is a matrix of two shareholder portfolio variables that proxy for the 'concentration' and 'fraction' of institutional holdings in acquirers, respectively; and $X_{Controls}$ is a matrix consisted of a standard set of variables that proxy for the M&A deal characteristics and the firm characteristics of the underlying acquirers.

Based on estimating the probit model in the stage one, Heckman's sample-bias correction technique uses an multinomial ordinary least-squares (OLS) regression in the second stage. The stage-two model is run on the acquirer level, as follows:

$$Acquirer\,CARs_k = X_{ActivistInvolvement,k}\beta + X_{Controls,k}\gamma + \sigma\lambda_k + \upsilon_k$$

where $Acquirer\,CARs_k$ is the summation of 3-day [-1: 1] acquirer abnormal returns around the deal announcements for acquirer $k$; $X_{ActivistInvolvement,k}$ is the vector of activist involvement variables associated with investor $k$, $X_{Controls,k}$ is a matrix consisted of a standard set of control variables commonly used in M&A literature associated with acquirer $k$; and $\lambda$ is the inverse Mills ratio, evaluated from the linear predictors of the stage-one probit model. The inclusion of $\lambda$ fills in the value for the omitted variables due to the sample selection process and hence corrects the potential existence of selection bias in the analysis sample.

Table 1.8 presents the regression results of the two-stage Heckman model. All the independent variables are measured for the acquirer firms and all the accounting variables are calculated over the fiscal year prior to the M&A deal announcements. The activist involvement variables reported in

the stage-two model are ones that appear statistically significant in the Heckman's multinomial OLS regressions and ones that appear statistically significante in the single-variate regressions[37] with the same sign (+/-). The four activist involvement variables that are statistically significant are 1). the number of HF activists, 2). maximum HF activist holding, 3). the level of concentrated holdings by HF activist, as proxied by HF activist Herfindahl index; and 4). the number of non-HF activists. More specifically, the results show that while the number of activist investors (both HF activists and non-HF activists) are positively associated with acquirer CARs, maximum 'HF activist holding' and 'HF activist Herfindahl' are negatively associated with acquirer CARs. This result appears to support the hypothesis that while collaborative efforts by activist investors (both HF activists and non-HF activists), as proxied by the number of HF activists and non-HF activists, play a monitoring role in acquirers, individualistic involvements in acquirers by HF activists, as proxied by maximum 'HF activist holding' and 'HF activist Herfindahl', don't monitor.

### 1.4.5 Long-horizon stock returns and operating performance

Long-horizon event studies analyze abnormal returns over a period of one to five years following the announcements of corporate events. Statistical tests in long-term event studies tend to be less reliable than short-term event studies, because assigning risk factors to compensate for risk over the long run is more complex[38]. The two most extensively used methods for assessing and calibrating long-horizon abnormal returns are the characteristic-based matching approach (or the buy-and-hold abnormal returns approach) and Jensen's alpha approach (or the calendar-time portfolio regression approach)[39]. While both approaches are subject to many empirical problems[40], I consider the buy-and-hold abnormal returns approach more suitable for this study. The rationales are two fold: (1). the sample size underlying the empirical analysis should be sufficiently large to mitigate the right-skewness bias arising from abnormality of long-horizon returns; (2). the buy-and-hold abnormal returns approach offers a solution to the heteroskedasticity problem induced by the clustering of M&A events over time.

[37] Results of the single-variate regressions are not shown in this paper.
[38] Barber and Lyon [1997], Campbell et al. [1997], Lyon et al. [1999], Kothari and Warner [2004]
[39] Kothari and Warner [2004]
[40] See Kothari et al. [2006] and Campbell et al. [1997] for detailed explanations.

## Table 1.7: Acquirer Announcement CARs

Panel A. Likelihood of acquirers being targeted by HF activists

First stage: Probit estimates

| | Coefficient | z value | |
|---|---|---|---|
| (Intercept) | -0.336 | -2.150 | * |
| Concentration | -1.704 | -1.514 | |
| Fraction | 0.153 | 1.868 | . |
| Tender offer | 0.042 | 0.919 | |
| Contested deal flag | -0.015 | -0.212 | |
| **Relative size** | -0.241 | -5.107 | *** |
| Attitude | 0.036 | 0.285 | |
| **Toehold** | 0.236 | 1.967 | * |
| Intra-industry flag | 0.051 | 1.507 | |
| ROE | -0.009 | -1.333 | |
| Sale growth | -0.035 | -0.678 | |
| D/E | 0.000 | 0.341 | |
| MVA | 0.000 | 0.581 | |
| **FCF** | 0.000 | 3.042 | ** |
| Profitability | 0.147 | 0.786 | |
| **M/B** | 0.023 | 2.852 | ** |
| PE ratio | 0.000 | -1.286 | |
| Year Fixed Effect | | YES | |
| McFadden $R^2$ | | 0.026 | |
| DF | | 6666 | |

Panel B. Sample-selection corrected estimates for acquirer CAR3 regressions

Second stage: OLS estimates

| | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | -0.046 | -1.233 | | -0.011 | -0.313 | | | | | | | |
| **# of HF activists** | 0.001 | 4.744 | *** | | | | | | | | | |
| **Max HF holding** | | | | -0.429 | -6.92 | *** | | | | | | |
| **HF activist Herfindahl** | | | | | | | -4.143 | -7.388 | *** | | | |
| **# of non-HF activists** | | | | | | | | | | 4.50E-03 | 6.114 | *** |
| Concentration | 0.119 | 1.673 | . | 0.140 | 1.964 | * | 0.151 | 2.121 | * | 2.89E-02 | 0.304 | |
| **Fraction** | -0.021 | -3.851 | *** | -0.022 | -3.967 | *** | -0.024 | -4.43 | *** | -7.12E-03 | -0.998 | |
| Tender offer | 0.002 | 0.607 | | 0.002 | 0.802 | | 0.001 | 0.568 | | 3.54E-03 | 1.092 | |
| Contested deal flag | 0.004 | 0.963 | | 0.004 | 1.077 | | 0.003 | 0.816 | | 7.85E-03 | 1.655 | . |
| Intra-industry flag | -0.002 | -1.035 | | -0.003 | -1.526 | | -0.004 | -1.671 | . | 2.94E-03 | 1.048 | |
| **Relative size** | 0.021 | 3.633 | *** | 0.021 | 3.687 | *** | 0.021 | 3.694 | *** | 1.66E-02 | 2.099 | * |
| IMR | 0.006 | 0.171 | | -0.021 | -0.587 | | -0.023 | -0.652 | | 7.48E-02 | 1.513 | |
| **d2e** | 0.000 | 6.922 | *** | 0.000 | 6.639 | *** | 0.000 | 6.741 | *** | 1.58E-04 | 8.062 | *** |
| MVA | 0.000 | 1.731 | . | 0.000 | 1.268 | | 0.000 | 1.252 | | 3.32E-08 | 1.544 | |
| FCF | 0.000 | 0.172 | | 0.000 | 0.546 | | 0.000 | 0.737 | | 1.10E-06 | 1.644 | |
| **Profitability** | 0.064 | 5.616 | *** | 0.066 | 5.867 | *** | 0.069 | 6.162 | *** | 8.59E-02 | 6.299 | *** |
| ROE | 0.000 | -0.817 | | -0.001 | -1.826 | . | -0.001 | -1.923 | . | -9.53E-04 | -1.56 | |
| **Sale growth** | -0.010 | -3.313 | *** | -0.010 | -3.389 | *** | -0.010 | -3.594 | *** | -1.60E-02 | -4.667 | *** |
| M/B | 0.000 | 0.714 | | 0.000 | 0.429 | | 0.000 | 0.454 | | 2.09E-03 | 2.516 | * |
| Year Fixed Effect | | YES | | | YES | | | YES | | | YES | |
| Adjusted $R^2$ | | 0.080 | | | 0.087 | | | 0.088 | | | 0.090 | |
| DF | | 3563 | | | 3563 | | | 3563 | | | 3074 | |

The buy-and-hold abnormal returns (or BHAR) approach calculates the difference between the long-term compound returns of an event firm and the long-term compound returns of a comparable non-event firm over the same pre-specified holding period. This approach implicitly assumes that the event firm and non-event firm are characteristically comparable and thus, only differ in the aspect of the event[41]. Once a proper match firm is found, BHAR over a holding period of t months is defined as:

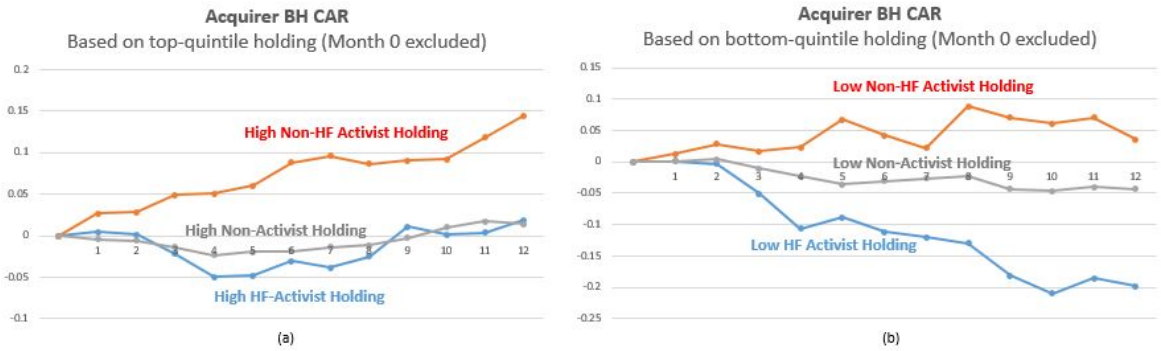
$$BHAR_i(t,T) = \prod_{t=1}^{T}(1+R_{i,t}) - \prod_{t=1}^{T}(1+R_{j,t})$$

where $R_j$ is the return of a non-event firm $j$ that is matched to the event firm $i$ and the time difference between $t$ and $T$ is one year (i.e., roughly 365 calendar days). Barber and Lyon [1997], studying long-horizon event study methods, find the control-firm approach that select a matching control firm on the basis of matching size and market-to-book ratios yield better specified test statistics than a reference portfolio (or benchmark index) approach. To find a suitable matching firm for calculating $BHAR_i(t,T)$, I augment the two-factor matching approach, as recommended by Barber and Lyon [1997], with a three-factor matching approach by including one additional variable that designates the sample and control firms must belong to the same industry, based on the three-digit SIC codes.

Similar to the short-horizon analysis, I use a combination of graphical presentations and regression models for the long-horizon analysis. Figure 1.8 plots the acquirer buy-and-hold CARs associated with the three groups of investors (i.e., HF activists, non-HF activists, and non-activists). Plot (a) shows how acquirers held by investors with top-quintile ownership in each of the three investor categories (i.e., HF activists, non-HF activists, and non-activists) compare over the course of 1-year post-announcement period. Plot (b) shows how acquirers held by investors with bottom-quintile ownership in each of the three investor categories compare over the course of 1-year post-announcement period. Both plots show that acquirers held by non-HF activist holdings tend to have the best long-horizon stock performance, while acquirers held by HF-activists tend to perform moderately, if not poorly, over the long run, depending on the percentage of HF holdings. Meanwhile, a comparion of plot (a) and (b) shows that acquirers associated with high-level (top-quintile) activist holdings tend to perform better in relativity

[41] Kothari and Warner [2004]

Figure 1.8: Acquirer Buy-and-hold CARs (HF Activists v. non-HF Activists v. non-activists)




to acquirers associated with low-level (bottom-quintile) activist holdings, for both HF activists and non-HF activists. Take as a whole, these two plots jointly show that high-level involvement by non-HF activists tends to impact the stock performance of acquirer firms positively over the long run, while high-level involvement by HF activists appears to be innocuous to the stock performance of acquirer firms over the long run. This result supports the hypothesis that non-HF activists monitor the long-run performance of their holding companies. Meanwhile, there is no enough evidence indicating that HF activists don't monitor over the long run.

Statistical tests adds the needed robustness to the long-horizon analysis. Table 1.8 presents the regression results of the two-stage Heckman model for analyzing the impact of activist involvements on BHARs. Panel A (Table 1.8) presents a probit model for the likelihood of a firm targeted by HF activists. The results from the probit model reveal what kind of acquirer characteristics are more likely to attract HF activist involvements. Panel B (Table 1.8) presents the estimates for the relation between activist involvement variables and the BHARs using the Heckman's selection bias correction technique. Similar to Table 1.7, only the activist involvement variables that stay statisically significant and consistent in both the Heckman's stage-two model and the corresponding single-variate regressions are reported[42].

Panel A reports the results of the probit model, showing that acquirers with high fraction of institutional holdings, lower institutional 'concentration', smaller 'relative size', higher 'toehold', higher free cash flows, and higher 'M/B' are more likely to attract investment by HF activists. This result

[42]Single-variate regression results are not reported in the paper.

makes sense, since I expect that HF-activist involvements are likely to make a bigger impact on acquirers with less concentrated institutional holdings, smaller size, higher 'toehold', and are overvalued in terms of market to book ratios. This result is also consistent with the recent papers on HF activism that hedge funds tend to target profitable firms with higher institutional holdings.

Panel B presents the results of the multinomial OLS regression after including the estimated inverse Mills ratio ($\lambda$) as one of the independent variables. The result shows that both the 'number of HF activists' and the 'number of non-HF activists' are positively associated with BHARs. This result remains consistent and statistically significant in both single and multiple regressions at the 1% level, providing further support to the result of Figure 1.8 that both HF activists and non-HF activists, on average, monitor the stock performance of acquirer firms over the long run.

Both the short-run and the long-run event studies are based on the premise that the stock market is sufficiently efficient, and thus would be able to evaluate the stock prices at the fair values. In actuality, however, the stock market might not be efficient enough to price the stocks timely and accurately, and thus, simply relying on the stock prices to gauge the firm performance over the long run might not render the whole picture of the firm performance. Ergo, many extant event studies have also done accounting analysis, in addition to using the event-study approach, to see how the financial performance of the sample firms changed over the long run[43].

Table 1.9 reports the Heckman's two-stage model for analyzing the impact of activist involvements on the industry-adjusted operating performance of the acquirer firms. Panel A reports the probit model for the likelihood of an acquirer being targeted by HF activists, based on an analysis sample that includes only the completed cases of all the included variables (endogenous and exogenous). Similar to Table 1.7 and 1.8, the result shows that HF activists prefer acquirers with lower institutional investor concentrations, higher institutional percentage holdings, smaller acquirer size relative to target size, higher toehold, higher level of free cash flows, higher market to book ratio, and lower PE ratios. Panel B presents the Heckman's stage-two OLS regression. The inverse Mills ratio (IMR) estimated from the probit model is included as an additional explanatory variable in the second-stage OLS model. Again, only the activist involvement variables that are consistent and statistically significant in both single-variate and multinomial OLS regressions are reported. Panel B shows that the number of HF activists

[43] Ravenscraft and Scherer [1987], Healy et al. [1992]

## Table 1.8: Buy-and-hold Abnormal Returns

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Coefficient | z value | |
|---|---|---|---|
| (Intercept) | -0.141 | -0.413 | |
| **Concentration** | -1.850 | -1.979 | * |
| **Fraction** | 0.153 | 2.073 | * |
| Tender offer | 0.015 | 0.274 | |
| Contested deal flag | 0.008 | 0.100 | |
| **Relative size** | -0.311 | -5.808 | *** |
| Attitude | -0.163 | -0.497 | |
| **Toehold** | 0.209 | 2.133 | * |
| Intra-industry flag | 0.041 | 1.236 | |
| ROE | -0.069 | -1.433 | |
| Sale growth | 0.019 | 0.532 | |
| D/E | 0.000 | 0.620 | |
| **FCF** | 0.000 | 3.258 | ** |
| Profitability | 0.060 | 0.329 | |
| MVA | 0.000 | -0.586 | |
| **M/B** | 0.019 | 2.214 | * |
| PE ratio | 0.000 | -0.766 | |
| Year Fixed Effect | | YES | |
| | | | |
| McFadden $R^2$ | | 0.026 | |
| DF | | 7026 | |

Panel B. Sample-selection corrected estimates for buy-and-hold abnormal returns

Second stage: OLS estimates

| | Coefficient | t value | | Coefficient | t value | |
|---|---|---|---|---|---|---|
| (Intercept) | 4.141 | 4.557 | *** | 5.027 | 7.748 | *** |
| | | | | | | |
| **# of HF activists** | 0.040 | 7.709 | *** | | | |
| **# of non-HF activists** | | | | 0.024 | 2.473 | * |
| | | | | | | |
| **Concentration** | 6.755 | 3.707 | *** | 6.490 | 5.283 | *** |
| **Fraction** | -0.913 | -6.337 | *** | -0.965 | -9.806 | *** |
| | | | | | | |
| **Tender offer** | -0.228 | -3.17 | ** | -0.136 | -2.674 | ** |
| **Contested deal flag** | -0.309 | -2.757 | ** | -0.381 | -4.958 | *** |
| Intra-industry flag | 0.005 | 0.092 | | -0.070 | -1.974 | * |
| Relative size | 0.215 | 1.154 | | 0.309 | 2.335 | * |
| | | | | | | |
| **IMR** | -3.209 | -3.591 | *** | -4.130 | -6.586 | *** |
| | | | | | | |
| d2e | 0.000 | 0.455 | | 0.000 | -0.700 | |
| **MVA** | 0.000 | -12.328 | *** | 0.000 | -14.694 | *** |
| **FCF** | 0.000 | -6.488 | *** | 0.000 | -7.650 | *** |
| Profitability | -0.467 | -1.788 | . | -0.265 | -1.489 | |
| **ROE** | 0.279 | 3.717 | *** | 0.311 | 5.894 | *** |
| Sale growth | -0.052 | -1.059 | | -0.032 | -0.919 | |
| **M/B** | -0.088 | -5.429 | *** | -0.085 | -7.579 | *** |
| Year Fixed Effect | | YES | | | YES | |
| | | | | | | |
| Adjusted $R^2$ | | 0.2755 | | | 0.2175 | |
| DF | | 3489 | | | 3511 | |

and the number of the non-HF activists are positively associated with acquirers' operating performance over the long run, whereas the concentration of HF activist holdings (i.e., HF activist Herfindahl) is negatively associated with acquirers operating performance over the long run. This result suggests that collaborative activist involvements by both HF activists and non-HF activists tend to positively impact on the long-run operating performance of acquirer firms, whereas concentrated HF activism efforts tend to negatively impact on the long-run operating performance of acquirer firms.

Combining the above evidence, the long-horizon analysis show that collaborative activist involvements in acquirers tend to generate consistently positive impact on the long-run performance of acquirers using both stock returns (Table 1.8) and accounting profitability (Table 1.9) as performance metrics. However, there is limited evidence from Table 1.9 that suggests that concentrated HF activist involvements tend to bring about negative value impact to the acquirers over the long run, judging by the ROAs of acquirers. These evidence is consistent with the hypothesis that collaborative efforts by activists are more effective at monitoring.

### 1.4.6 Non-performance related M&A impacts

This paper has so far analyzed the relations between activist involvements and the short-term / long-term performance of acquirers. This section studies how activist involvements may impact on the non-performance aspects of acquirers, such as the percentage of stock financing, deal completion status, and deal attitude, as a way to examine the scope of influence activists have on M&As.

#### 1.4.6.1 Percentage of stock financing in M&As

Loughran and Vijh [1997] note that stock-financed takeovers can be viewed in two part: an equity issue and a takeover. Because of the equity issuance component of a stock-financed takeover, managements of the acquirer firms may have incentives to manage the firm's earnings prior to the takeover in order to inflate the stock price temporarily and hence reduce the cost of the takeover. Therefore, stock-financed takeovers are frequently tied into the suspicion that the stock price of acquirers are overvalued, either due to artificial earning management or market misvaluation. As a result, preponderance of empirical work on M&As find that stock-financed deals tend to be associated with lower announcement CARs

## Table 1.9: Industry-Adjusted ROA

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Estimate | z value | |
|---|---|---|---|
| (Intercept) | -0.284 | -2.678 | ** |
| Concentration | -0.833 | -1.574 | |
| **Fraction** | 0.113 | 3.085 | ** |
| Tender offer | 0.046 | 1.562 | |
| Contested deal flag | -0.008 | -0.156 | |
| **Relative size** | -0.238 | -8.007 | *** |
| Attitude | -0.042 | -0.452 | |
| **Toehold** | 0.187 | 3.136 | ** |
| **Intra-industry flag** | 0.039 | 1.977 | * |
| ROE | -0.009 | -1.872 | . |
| Sale growth | 0.022 | 1.211 | |
| D/E | 0.000 | -0.167 | |
| **MVA** | 0.000 | -2.237 | * |
| **meq** | 0.000 | 7.043 | *** |
| **FCF** | 0.000 | 3.375 | *** |
| Profitability | 0.003 | 0.028 | |
| **M/B** | 0.010 | 2.559 | * |
| **PE ratio** | 0.000 | -2.014 | * |
| Year Fixed Effect | | YES | |
| | | | |
| McFadden $R^2$ | | 0.028 | |
| DF | | 19194 | |

Panel B. Sample-selection corrected estimates for industry-adjusted ROAs

Second stage: OLS estimates

| | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | |
|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | 0.066 | 3.247 | ** | 0.153 | 8.494 | *** | 0.065 | 2.703 | ** |
| | | | | | | | | | |
| **# of HF activists** | 0.002 | 10.086 | *** | | | | | | |
| **Max HF holding** | | | | -0.222 | -5.141 | *** | | | |
| **# of non-HF activists** | | | | | | | 0.007 | 10.937 | *** |
| | | | | | | | | | |
| **Concentration** | -0.213 | -4.11 | *** | -0.150 | -2.764 | ** | -0.241 | -4.36 | *** |
| **Fraction** | -0.019 | -5.179 | *** | -0.023 | -6.216 | *** | -0.016 | -3.928 | *** |
| | | | | | | | | | |
| **Tender offer** | 0.019 | 6.951 | *** | 0.021 | 7.442 | *** | 0.019 | 6.335 | *** |
| **Contested deal flag** | -0.029 | -6.102 | *** | -0.028 | -5.832 | *** | -0.010 | -2.05 | * |
| **Intra-industry flag** | 0.010 | 5.194 | *** | 0.009 | 4.693 | *** | 0.012 | 6.058 | *** |
| **Relative size** | 0.031 | 7.861 | *** | 0.033 | 8.356 | *** | 0.040 | 8.562 | *** |
| | | | | | | | | | |
| **IMR** | -0.161 | -8.362 | *** | -0.237 | -13.56 | *** | -0.179 | -8.161 | *** |
| | | | | | | | | | |
| d2e | 0.000 | -0.034 | | 0.000 | -0.23 | | 0.000 | -0.065 | |
| **FCF** | 0.000 | -7.34 | *** | 0.000 | -6.209 | *** | 0.000 | -6.341 | *** |
| **Profitability** | 0.531 | 55.385 | *** | 0.543 | 56.478 | *** | 0.528 | 56.192 | *** |
| MVA | 0.000 | 0.929 | | 0.000 | 0.883 | | 0.000 | 2.219 | * |
| **ROE** | 0.002 | 4.027 | *** | 0.002 | 4.173 | *** | 0.003 | 4.633 | *** |
| **Sale growth** | -0.007 | -3.651 | *** | -0.007 | -4.012 | *** | -0.007 | -4.206 | *** |
| **M/B** | -0.002 | -5.635 | *** | -0.003 | -6.457 | *** | -0.004 | -9.555 | *** |
| | | | | | | | | | |
| Year Fixed Effect | | YES | | | YES | | | YES | |
| | | | | | | | | | |
| Adjusted $R^2$ | | 0.379 | | | 0.374 | | | 0.370 | |
| DF | | 9796 | | | 9796 | | | 9373 | |

and lower long-run underperformance for acquirers[44]. Given this well-documented empirical fact, activists may choose to expend monitoring efforts in lowering the percentage of stock financing in M&A payments. If so, I expect to see a negative sign between activist involvement variables and the percentage of stock financing in M&As. That is, activist involvements in acquirers should negatively impact on the level of stock financing in M&As.

Table 1.10 presents the Heckman's two-stage regression estimates for studying the impact of activist involvements on the level of stock financing. The analysis sample for this regression is formed by including only the completed cases of the dependent and all the independent variables. The stage-one probit model show similar results to the stage-one regressions earlier. The results show that HF activists tend to prefer acquirers with less concentrated institutional holdings, higher institutional ownership, smaller in size relative to targets, higher toehold, higher FCF, higher M/B, and lower P/E ratio. The stage-two model follows the Heckman's OLS estimation procedure by including one additional variable – inverse Mills ratio – in a standard multiple regression. The result show that, after controlling for all the relevant variables, all but the maximum HF percentage holding (Max HF holding) and the concentration of HF activist holdings (HF activist Herfindahl) are negatively associated with the percentage of stock financing. To confirm the causal relationship between explanatory variables and the dependent variable, I conducted the Granger causality test. The test result is consistent with the view that activist involvements negatively impact on the level of stock financing in M&As, not the other way around.

#### 1.4.6.2 Deal Completion Status

Kahan and Rock [2007] note that HF activists tend to be much more actively involved in corporate control activism than traditional institutional investors do. In particular, HF activists would pre-emptively block the deals from consummation, if they believe the potential takeover(s) would harm shareholder value. In the past, HF activists have blocked potential acquirers, blocked potential targets, or somtimes, as members of a HF coalition, acquirered companies themselves[45]. On the other hand, traditional activists have very rarely engaged in corporate control activism themselves. In the wake

[44] Martin [1996], Heron and Lie [2002], Faccio and Masulis [2005]
[45] Kahan and Rock [2007], Brav et al. [2008], Klein and Zur [2009]

## Table 1.10: % Stock Financing

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Coefficient | z value | |
|---|---|---|---|
| (Intercept) | -0.284 | -2.678 | ** |
| Concentration | -0.833 | -1.574 | |
| **Fraction** | 0.113 | 3.085 | ** |
| Tender offer | 0.046 | 1.562 | |
| Contested-deal flag | -0.008 | -0.156 | |
| **Relative size** | -0.238 | -8.007 | *** |
| Attitude | -0.042 | -0.452 | |
| **toehold** | 0.187 | 3.136 | ** |
| **Intra-industry flag** | 0.039 | 1.977 | * |
| **MVA** | 0.000 | -2.237 | * |
| **meq** | 0.000 | 7.043 | *** |
| **FCF** | 0.000 | 3.375 | *** |
| Profitability | 0.003 | 0.028 | |
| **ROE** | -0.009 | -1.872 | . |
| Sale growth | 0.022 | 1.211 | |
| D/E | 0.000 | -0.167 | |
| **M/B** | 0.010 | 2.559 | * |
| **PE ratio** | 0.000 | -2.014 | * |
| Year Fixed Effect | | YES | |
| McFadden $R^2$ | | 0.022 | |
| DF | | 19198 | |

Panel B. Sample-selection corrected estimates for Pctg of stock regressions

Second stage: OLS estimates

| | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | 144.400 | 9.438 | *** | 81.350 | 4.719 | *** | 64.460 | 3.849 | *** | 63.600 | 3.798 | *** |
| **# of HF activists** | -1.329 | -14.893 | *** | | | | | | | | | |
| **# of non-HF activists** | | | | -1.082 | -4.261 | *** | | | | | | |
| **Max non-HF holding** | | | | | | | -70.790 | -2.308 | * | | | |
| **non-HF activist Herfindahl** | | | | | | | | | | -408.700 | -2.192 | * |
| **Concentration** | -35.520 | -1.698 | . | -101.500 | -4.330 | *** | -86.690 | -3.695 | *** | -85.990 | -3.658 | *** |
| Fraction | -2.480 | -1.461 | | -2.702 | -1.409 | | -3.506 | -1.836 | . | -3.644 | -1.908 | . |
| **Tender offer** | -23.170 | -19.928 | *** | -26.540 | -20.127 | *** | -26.540 | -20.095 | *** | -26.570 | -20.127 | *** |
| Contested deal flag | -3.988 | -2.122 | * | 1.852 | 0.891 | | 1.713 | 0.823 | | 1.827 | 0.878 | |
| Relative size | -16.580 | -6.838 | *** | 0.004 | 0.314 | | -22.680 | -8.145 | *** | -22.710 | -8.157 | *** |
| **Intra-industry flag** | 7.271 | 8.862 | *** | 0.000 | 10.082 | *** | 8.511 | 9.629 | *** | 8.515 | 9.634 | *** |
| IMR | -42.290 | -2.841 | ** | 25.990 | 1.576 | | 35.840 | 2.194 | * | 36.170 | 2.214 | * |
| d2e | 0.065 | 3.433 | *** | 0.000 | -1.016 | | 0.002 | 0.141 | | 0.002 | 0.138 | |
| **MVA** | 0.000 | 13.236 | *** | -0.002 | -8.440 | *** | 0.000 | 10.045 | *** | 0.000 | 10.032 | *** |
| meq | 0.000 | -2.916 | ** | -93.680 | -24.191 | *** | 0.000 | -1.062 | | 0.000 | -1.036 | |
| **FCF** | -0.001 | -8.019 | *** | -23.190 | -8.331 | *** | -0.002 | -8.494 | *** | -0.002 | -8.472 | *** |
| **Profitability** | -90.550 | -23.879 | *** | 8.076 | 9.070 | *** | -96.080 | -25.121 | *** | -96.360 | -25.211 | *** |
| **ROE** | 0.829 | 4.684 | *** | 0.574 | 2.364 | * | 0.507 | 2.091 | * | 0.503 | 2.074 | * |
| **Sale growth** | 1.486 | 1.938 | . | 1.964 | 2.620 | ** | 2.300 | 3.088 | ** | 2.346 | 3.153 | ** |
| **M/B** | 0.615 | 3.556 | *** | 1.008 | 5.646 | *** | 1.086 | 6.118 | *** | 1.091 | 6.15 | *** |
| Year Fixed Effect | | YES | | | YES | | | YES | | | YES | |
| Adjusted $R^2$ | | 0.3101 | | | 0.293 | | | 0.2923 | | | 0.2923 | |
| DF | | 9795 | | | 9372 | | | 9372 | | | 9372 | |

of hedge fund activism, however, traditional activists appear to have up the ante on the corporate control efforts. A few mutual funds, for example, have supported hedge funds to block the acquisition of London Stock Exchange by Deutsche Bank. Additionally, Franklin Mutual Advisors, an advisory service for mutual funds, joined force with a hedge fund and other investors in making a bid for Beverly Enterprises. Nonetheless, I am not aware of any example of traditional activists spearheading corporate controll efforts on their own.

Drawing from the above evidence, I posit that HF-activist involvements in acquirers should be negatively associated with deal completion status in M&As, since HF activist involvements are likely to be associated with higher probability of blocked deals and higher level of hostility in general, while non-HF involvements in acquirers should be positively associated with deal completion. No empirical work thus far, to my knowledge, has tested the relations between activist involvements and deal completion status. To control for sample selection bias, I use the Heckman's two-stage model to examine the relations between activist involvement variables and deal completion status. I expect to see negative associations between the HF-activist involvements and deal completion status, while positive associations between non-HF activist involvements and deal completion status. Table 1.11 presents the regression estimates. The dependent variable 'Status' is a dummy factor variable indicating whether a M&A deal is completed or withdrawn. All the explanatory variables are measured based on the acquirer firm deal characteristics and financial data.

Panel A of Table 1.11 shows the probit model estimates of the likelihood of a firm being targeted by HF activists in the acquirer sample. Consistent with the probit estimates in earlier regressions, I find that HF activists are prone to target acquirer firms with lower concentrated institutional holdings, higher institutional percentage holdings, smaller in size relative to targets, higher level of toehold, higher level of FCF, higher market-to-book ratios, and lower PE ratios. The inverse Mills ratio (IMR), calculated based on the estimated regressors of acquirer selectivity in stage-one model, adjusts for the selection-bias in the stage-two model. Panel B presents the results of a multinomial Logit regression following the Heckman's sample-bias correction estimation procedure. Consistent with the hypothesis, the results show that HF activist involvement in acquirers, as proxied by 'maximum HF holdings' and 'HF activist Herfindahl index', are negatively associated with the likelihood of M&A deal completion,

while non-HF activist involvement in acquirers, as proxied by the 'number of non-HF activists', is positively associated with the likelihood of M&A deal completion. This result corrobrates with the observations that HF activists help prevent M&A deals from consummation, while non-HF activists, in spite of their ownership in acquirers, don't pre-emptively block M&As.

#### 1.4.6.3 Deal Attitudes

HF activists are also known to initiate activism with hostile tactics. Brav et al. [2008] documents the various tactics hedge funds use in initiating activism campaigns through sampling Schedule 13D filings. Their findings show that roughly 62% of hedge fund activism cases involve some kind of hostile tactics[46], while less than 30% of cases are openly hostile to managers of the targeted companies. In the stated cases, hostility is revealed through public naming-and-shaming, threatened or actual proxy contests, takeovers, and lawsuits. Traditional activists, on the other hand, very rarely resort to hostile tactics in their activism efforts. The most hostile tactic ever adopted by traditional activists that I am aware of is the Focus-List program by California Public Employees Retirement System (CalPERS), through which CalPERS sifts through their list of holding companies every summer to choose a handful of underperforming companies infested with governance problems to target publicly. While generating good results through the Focus-List program, CalPERS dropped the program in 2010, in favor of a more mellow and private corporate engagement program. Other known traditional activists have historically been more careful and subtle in their activism efforts, as comparing to CalPERS. Vast majority of activism endeavors by traditional activists involve private negotiations with managements behind-the-doors, even though a small percentage of traditional activists would escalate the efforts through submitting shareholder proposals, should private negotiations fail.

Based on the current knowledge of shareholder activism, I hypothesize that HF activist involvements are associated with higher instances of hostile takeovers, while non-HF activist involvements are not associated with hostile takeovers. The findings in Panel B (Table 1.12) lend limited support to my hypothesis on deal attitude. The logit regression, following the Heckman's two-stage estimation procedure, shows that the joint efforts among HF activists, as proxied by the number of HF activists, are associated with higher instances of hostile takeovers, while more separate activism efforts by HF

[46] See Table 1, Brav et al. [2008].

# Table 1.11: Status

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Estimate | z value | |
|---|---|---|---|
| (Intercept) | -0.284 | -2.678 | ** |
| | | | |
| Concentration | -0.833 | -1.574 | |
| **Fraction** | 0.113 | 3.085 | ** |
| | | | |
| Tender offer | 0.046 | 1.562 | |
| Contested deal flag | -0.008 | -0.156 | |
| **Relative size** | -0.238 | -8.007 | *** |
| Attitude | -0.042 | -0.452 | |
| **toehold** | 0.187 | 3.136 | ** |
| **Intra-industry flag** | 0.039 | 1.977 | * |
| | | | |
| ROE | -0.009 | -1.872 | . |
| Sale growth | 0.022 | 1.211 | |
| D/E | 0.000 | -0.167 | |
| **MVA** | 0.000 | -2.237 | * |
| **meq** | 0.000 | 7.043 | *** |
| **FCF** | 0.000 | 3.375 | *** |
| Profitability | 0.003 | 0.028 | |
| **M/B** | 0.010 | 2.559 | * |
| **PE ratio** | 0.000 | -2.014 | * |
| | | | |
| Year Fixed Effect | 0.056 | 1.093 | |
| | | | |
| McFadden $R^2$ | 2.80E-02 | | |
| DF | 19194 | | |

Panel B. Sample-selection corrected estimates for Status regressions

Second stage: Logit estimates

| | Coefficient | z value | | Coefficient | z value | | Coefficient | z value | |
|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | -5.833 | -3.047 | ** | -5.706 | -2.964 | ** | -4.661 | -2.236 | * |
| | | | | | | | | | |
| **Max HF holding** | -8.233 | -4.676 | *** | | | | | | |
| **HF activist Herfindahl** | | | | -21.790 | -2.228 | * | | | |
| **# of non-HF activists** | | | | | | | 0.208 | 5.793 | *** |
| | | | | | | | | | |
| **Concentration** | -12.670 | -6.083 | *** | -13.120 | -6.227 | *** | -9.820 | -4.819 | *** |
| Fraction | 0.810 | 3.135 | ** | 0.789 | 3.045 | ** | 0.338 | 1.448 | |
| | | | | | | | | | |
| Tender offer | 0.334 | 1.93 | . | 0.295 | 1.708 | . | 0.286 | 1.495 | |
| **Contested deal flag** | -3.608 | -24.375 | *** | -3.617 | -24.462 | *** | -3.539 | -23.647 | *** |
| Relative size | -0.009 | -0.026 | | -0.029 | -0.089 | | 0.408 | 1.095 | |
| | | | | | | | | | |
| **IMR** | 8.690 | 4.56 | *** | 8.568 | 4.47 | *** | 5.858 | 2.843 | ** |
| | | | | | | | | | |
| **MVA** | 0.000 | -9.755 | *** | 0.000 | -9.773 | *** | 0.000 | -6.463 | *** |
| **meq** | 0.000 | 8.099 | *** | 0.000 | 8.255 | *** | 0.000 | 4.29 | *** |
| **FCF** | 0.000 | 5.398 | *** | 0.000 | 5.396 | *** | 0.000 | 3.873 | *** |
| **Profitability** | 1.935 | 3.744 | *** | 1.889 | 3.57 | *** | 1.167 | 2.337 | * |
| ROE | -0.087 | -1.741 | . | -0.079 | -1.63 | | -0.067 | -1.395 | |
| **Sale growth** | -0.190 | -2.547 | * | -0.208 | -2.758 | ** | -0.247 | -3.466 | *** |
| M/B | 0.003 | 0.12 | | 0.002 | 0.106 | | 0.032 | 1.321 | |
| | | | | | | | | | |
| Year Fixed Effect | 0.533 | 1.374 | | 0.520 | 1.335 | | 0.630 | 2.149 | * |
| | | | | | | | | | |
| McFadden $R^2$ | | 0.028 | | | 0.315 | | | 0.244 | |
| DF | | 9797 | | | 9797 | | | 9374 | |

activists, as proxied by maximum HF percentage holding and HF activism Herfindahl index, are associated with more friendly takeovers. Meanwhile, I didn't find any evidence suggesting non-HF activists have any impact on deal attitude at all. This discrepancy in regression results support the claim that while HF activists have higher proclivity to become hostile, but they reserve the friendly approach to activism as well. For after all, the friendly approach to activism much more cost-efficient, from the cost-and-return standpoint.

In summary, the probit models examining the factors contributing to the likelihood of acquirers being targeted by HF activists, shown in Panel A (Table 1.7 - 1.11), provide a consistent result, even though the estimations are based on different analysis samples. In particular, the estimates show that HF activists tend to prefer acquirers with high percentage of institutional holdings (Fraction), smaller in size relative to targets (Relative size), higher toehold, larger in market value of equity (meq), high level of free cashflow (FCF), and higher market-to-book ratios (M/B). This result is somewhat consistent with the previous findings on HF activism[47] showing that HF activists tend to target "value" firms with sound operating cash flows. However, most previous studies found that HF activists tend to target undervalued firms with low market value relative to book value. This contradicts with my result that HF activists tend to be involved in overvalued acquirers with higher market value relative to book value (M/B). I suspect that this difference arises from the fact that my analysis sample is over-represented by overvalued acquirers, whereas the previous studies are based on companies that are more representative of the COMPUSTAT universe.

Moreover, the collective evidence from Panel B (Table 1.7 - 1.11) illustrates how HF activists and non-HF activists differ in monitoring acquirers. More specifically, I find that collaborative efforts among HF activists (proxied by the number of HF activists in acquirers) tend to positively impact on both the performance-related and the non-performance-related aspects of M&A deals, whereas concentrated or singular involvements by HF activists in acquirers (proxied by 'Max HF holding' and 'HF activist Herfindahl') tend to negative impact on the performance of M&A acquirers. On the other hand, I didn't find any evidence suggesting that non-HF activists negatively impact on any aspect of M&As. As a result, I find supportive evidence to the hypothesis that collaborative efforts among shareholder activists (both HF and non-HF activists) play the most effective role in monitoring,

[47] Brav et al. [2008], Clifford [2008], Greenwood and Schor [2009]

## Table 1.12: Attitude

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Estimate | z value | |
|---|---|---|---|
| (Intercept) | -0.284 | -2.678 | ** |
| Concentration | -0.833 | -1.574 | |
| **Fraction** | 0.113 | 3.085 | ** |
| Tender offer | 0.046 | 1.562 | |
| Contested deal flag | -0.008 | -0.156 | |
| **Relative size** | -0.238 | -8.007 | *** |
| Attitude | -0.042 | -0.452 | |
| **Toehold** | 0.187 | 3.136 | ** |
| **Intra-industry flag** | 0.039 | 1.977 | * |
| **MVA** | 0.000 | -2.237 | * |
| **meq** | 0.000 | 7.043 | *** |
| **FCF** | 0.000 | 3.375 | *** |
| **ROE** | -0.009 | -1.872 | . |
| Sale growth | 0.022 | 1.211 | |
| D/E | 0.000 | -0.167 | |
| Profitability | 0.003 | 0.028 | |
| **M/B** | 0.010 | 2.559 | * |
| **PE ratio** | 0.000 | -2.014 | * |
| Year Fixed Effect | | Yes | |
| McFadden $R^2$ | | 0.028 | |
| DF | | 19194 | |

Panel B. Sample-selection corrected estimates for deal attitude regressions

Second stage: Logit estimates

| | Estimate | t value | | Estimate | t value | | Estimate | t value | |
|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | -39.280 | -8.539 | *** | -40.420 | -9.475 | *** | -41.180 | -9.439 | *** |
| **# of HF activists** | -0.215 | -3.71 | *** | | | | | | |
| **Max HF holding** | | | | 20.970 | 1.939 | . | | | |
| **HF activist Herfindahl** | | | | | | | 466.800 | 2.292 | * |
| **Concentration** | -33.070 | -6.791 | *** | -29.530 | -6.414 | *** | -29.980 | -6.525 | *** |
| **Fraction** | 4.091 | 4.973 | *** | 4.429 | 5.479 | *** | 4.686 | 5.544 | *** |
| **Tender offer** | -2.725 | -7.303 | *** | -2.809 | -7.589 | *** | -2.844 | -7.636 | *** |
| **Contested deal flag** | -4.593 | -9.57 | *** | -4.003 | -9.431 | *** | -4.043 | -9.473 | *** |
| **Relative size** | -1.723 | -2.598 | ** | -1.810 | -2.953 | ** | -1.875 | -3.051 | ** |
| **IMR** | 46.180 | 8.926 | *** | 46.690 | 9.885 | *** | 47.530 | 9.831 | *** |
| **d2e** | -0.066 | -6.18 | *** | -0.058 | -6.109 | *** | -0.059 | -6.233 | *** |
| **meq** | 0.000 | 6.788 | *** | 0.000 | 7.086 | *** | 0.000 | 7.184 | *** |
| **MVA** | 0.000 | -3.371 | *** | 0.000 | -3.214 | ** | 0.000 | -3.184 | ** |
| **FCF** | 0.000 | 2.357 | * | 0.000 | 2.548 | * | 0.000 | 2.512 | * |
| **Profitability** | 8.471 | 5.132 | *** | 8.920 | 4.961 | *** | 8.979 | 4.827 | *** |
| **ROE** | -5.518 | -4.975 | *** | -6.230 | -5.341 | *** | -6.460 | -5.241 | *** |
| **Sale growth** | 2.041 | 3.427 | *** | 1.793 | 3.347 | *** | 1.790 | 3.395 | *** |
| Year Fixed Effect | | YES | | | YES | | | YES | |
| McFadden $R^2$ | | 0.655 | | | 0.647 | | | 0.649 | |
| DF | | 9797 | | | 9797 | | | 9797 | |

whereas the concentrated or singular activist involvements are less effective in monitoring.

### 1.4.7 Cross-holding Analysis

In the previous sections, the analysis is done exclusively for acquirers. When investors of acquirers simultaneously own shares in targets, they become cross-holders who have exposures to both sides of M&A deals. Firms with exposures to only one side of M&A transactions are firm-value maximizers, so called because their monitoring interests are natually aligned with maximize value of the firm to which they have ownership. Cross-holders, with exposures to both sides of the deals, would not be content with maximizing the value of a particular firm. Instead, their best interests lie in maximizing the portfolio value of all portfolio companies. This discrepancy in monitoring objectives could potentially lead cross-holders to behave differently relative to firm-value maximizers, when it comes to influencing acquirers and targets. This section examines whether cross-holders have different impacts on acquirers, due to their hypothetically different objectives in monitoring. In the subsequent analysis, I examine the relations between activist cross-holders and acquirer CARs, takeover premiums, and the percentage of stock financing in M&A payment.

#### 1.4.7.1 Takeover premiums

In the case of takeover premiums, firm-value maximizers with holdings in the target would want a larger premium whereas those with holdings in the acquirer would prefer a smaller one. Cross-holders with exposures to both sides of the transaction, however, are faced with a tougher decision to make. Ideally, cross-holders can base this decision on weighing the relative impacts of the two positions they have in acquirers and targets, but this method is difficult, if not impossible, to implement in practice. Non-HF activists tend to already have cumulated shares of acquirers and targets long before the M&A announcements are made ("incidental and ex-post"). Known for their passive investment styles, they are unlikely to adjust their positions actively in acquirers and targets in order maximize their gains for the M&As. HF activists, while known for taking strategic positions in M&As for profit purposes, are also unlikely to specialize in the balancing act of maximizing profits through their cross-ownership positions ("strategic and ex-ante"). The rationale is that if they are so good as to be able to predict the

precise outcomes of a M&A deal, they would be much better off loading up with only target shares, since target shareholders tend to be the foremost beneficiaries in M&As.

Harford et al. [2011] proposes the net wealth change of a M&A cross-holder in the following equation:

$$\triangle W_{pre\_to\_post\_deal} = \alpha_B(\triangle bidder\ value) + \alpha_T(takeover\ premium)$$

where $\alpha_B$ is the fraction of ownership in bidders, $\alpha_T$ is the fraction of ownership in targets.

In order to maximize the net wealth change, a cross-holder needs preemptively to choose a suitable $\alpha_B$ and a suitable $\alpha_T$, after accurately predicting the change in bidder value around the deal announcements and the level of takeover premium. This whole operation requires accesses to non-public information (i.e., takeover premium) and superb prediction skills (i.e., change in bidder value), which probably amounts to an insurmountable task, even for the most sophisticated investor.

Given that the perfect mathematical optimization is hard to achieve, cross-holders could resort to value-creation by way of mitigating agency problems embedded in M&A transactions, including but are not limited to preventing overpayment by acquirer management and lowering the extent of stock financing in M&As. Should cross-holders resort to this route, cross-holders who create positive shareholder wealth in M&As should first and foremost be successful monitors of agency problems. If so, it follows that higher levels of monitoring effectiveness should bring about higher levels of positive wealth change around the M&A deal announcements.

HF cross-holders would not, however, always monitor. Kahan and Rock [2007] illuminate the case of "empty votes" that describe hedge funds who become cross-holders only to use acquirer shares as a voting devise in order to pass the deal. In this case, hedge fund cross-holders would not bother to monitor (such as voting against the high premiums or high percentage of stock financing), since their risks in bidders are hedged away. This type of HF cross-holders tend to generate losses in acquirers, while realize large gains in targets.

To develop the testable hypothesis, I divide HF activist cross-holders and non-HF activist cross-holders into three distinctive categories, defined by wealth change around deal announcements, as follows:

**Type-1: Strictly winning cross-holders** are defined as cross-holders who realize gains in both acquirers and targets.

**Type-2: Loss offsetting cross-holders** are defined as cross-holders who are able to compensate losses in acquirers with gains in targets, achieving a positive overall wealth change.

**Type-3: Negative overall cross-holders** are defined as cross-holders who generate losses in both acquirers and targets.

Type-1 cross-holders (i.e., strictly winning cross-holders), achieving positive gains in both acquirers and targets, should be the most effective monitors. Type-2 cross-holders (i.e., loss offsetting cross-holders), whose gains in targets more than compensate losses in acquirers, should not be effective monitor of acquirers. Type-3 cross-holders (i.e., negative overall cross-holders), generating losses in both acquirers and targets, would not be successful monitors of agency problems. Thus, I predict that Type-1 cross-holders are associated with higher acquirer CARs, lower takeover premiums, and lower percentage of stock financing.

> **Testable Hypothesis 1**: Type-1 cross-holders are associated with higher acquirer CARs, lower takeover premiums, and lower percentage of stock financing.

Table 1.12 presents the descriptive summary of the three categories of cross-holders. Column 1 and column 4 show the number of cross-holders in each category. Column 2 and column 5 show the number of cross-holder in each category as a percentage of the total number of cross-holders. Column 3 and column 6 show the number of cross-holders in each category as a percentage of total number of acquirer investors. The results indicate that while a much smaller percentage of acquirer investors, out of the analysis sample, are HF cross-holders (13.6% vs. 42.9%), a much smaller percentage of HF cross-holders lose money (i.e., Type-3: negative overall cross-holders – 27.5% vs. 42.8%) in M&As. The statistics suggests that higher percentage of HF cross-holders are profitable in M&As, relative to non-HF cross-holders. This result makes sense, since HF activists are more likely to become cross-holders in M&As by choice, while non-HF activists are more likely to become cross-holders in M&As by default.

Table 1.13: Cross-holder Summary

| | HF Activists | | | Non-HF Activists | | |
|---|---|---|---|---|---|---|
| | Count | % of total crshldr # | % of total acq invstrs | Count | % of total crshldr # | % of total acq invstrs |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Strictly Winning Cross-holders | 188 | 29.7% | 4.0% | 602 | 32.4% | 13.9% |
| Loss Offsetting Cross-holders | 255 | 40.3% | 5.5% | 415 | 22.3% | 9.6% |
| Negative Overall Cross-holders | 174 | 27.5% | 3.7% | 795 | 42.8% | 18.4% |
| Other Cross-holders | 15 | 2.4% | 0.3% | 46 | 2.5% | 1.1% |
| Total # of Cross-holders | 632 | 100.0% | 13.6% | 1858 | 100.0% | 42.9% |

The hypothesis posits that cross-holders who are effective monitors of agency problems tend to have positive wealth effects. If this hypothesis holds, then we should observe empirically that Type-1 cross-holders' involvement in acquirers are positively associated with acquirer CARs. Table 1.13 presents the estimates of Heckman's two-stage model that analyzes the relationship between acquirer CARs and acquirer involvements by different types of cross-holders. The stage-1 probit estimates (Panel A) show how different acquirer characteristics attribute to the probability of a firm being targeted by HF activists. The results of the probit model is then used to calculate the inverse Mills ratios (IMR), which is then included in the stage-2 OLS estimates (Panel B) as an additional variable in order to correct the potential sample-selection bias in the analysis sample.

Panel B shows how different types of cross-holders impact on acquirer CARs. The result shows that HF cross-ownership in general is negatively associated with acquirer CARs. However, the three sub-categories of HF cross-holders show divergent results. Acquirer involvements by Type-1 HF cross-holders (strictly winning crossholders) are positively associated with acquirer CARs. However, acquirer involvements by Type-2 HF cross-holders (loss offsetting cross-holders) and Type-3 HF cross-holders (negative overall cross-holders) are negatively associated with acquirer CARs. This result stays consistent and statistically significant in single-variable OLS regressions probing the relations between dummy HF cross-holder variables and acquirer CARs, providing further support that only Type-1 HF cross-holders are effective monitors of acquirer performance. Note that HF cross-holders who cast "empty votes" are included in Type-2 crossholders. The result shows that Type-2 cross-holders tend to be negatively associated with acquirer CARs. While it is unclear what percentage of Type-2 cross-holders are "empty voters". The regression result can't rule out the possibility that the presence of "empty voters" in Type-2 cross-holders are partially responsible for the lack of monitoring in acquirers.

Table 1.14: Impact of Cross-holdings on CAR3

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Coefficient | z value | |
|---|---|---|---|
| (Intercept) | -9.07E-02 | -0.727 | |
| Status | -4.55E-02 | -0.683 | |
| Attitude | -1.17E-01 | -0.984 | |
| Tender offer | 5.02E-03 | 0.113 | |
| **Percentage of Stock** | -2.07E-03 | -5.472 | *** |
| Concentration | -9.85E-01 | -0.912 | |
| **Fraction** | 4.16E-01 | 5.81 | *** |
| D/E | 2.91E-04 | 0.746 | |
| **meq** | 2.95E-06 | 11.691 | *** |
| M/B | -1.45E-02 | -1.71 | . |
| McFadden $R^2$ | | 0.027 | |
| Degree of freedom | | 7158 | |

Panel B. Sample-selection corrected estimates for acquirer CARs

Second stage: OLS estimates

| | HF Activists | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | t value | Coefficient | t value | Coefficient | t value | Coefficient | t value |
| (Intercept) | 0.173 | 4.112 *** | 0.159 | 3.818 *** | 0.185 | 4.417 *** | 0.168 | 4.02 *** |
| **cross-ownership** | -0.007 | -2.752 ** | | | | | | |
| **strictly winning crossholder** | | | 0.037 | 8.782 *** | | | | |
| **loss offsetting crossholder** | | | | | -0.023 | -6.447 *** | | |
| **negative overall crossholder** | | | | | | | -0.038 | -8.136 *** |
| **Status** | 0.023 | 5.934 *** | 0.024 | 6.131 *** | 0.024 | 6.193 *** | 0.023 | 5.77 *** |
| **Attitude** | 0.037 | 5.132 *** | 0.035 | 4.919 *** | 0.035 | 4.801 *** | 0.037 | 5.162 *** |
| **Tender offer** | -0.005 | -1.955 . | -0.005 | -2.245 * | -0.005 | -2.084 * | -0.005 | -2.108 * |
| % of stock financing | 0.000 | 0.441 | 0.000 | 0.217 | 0.000 | 0.687 | 0.000 | 0.502 |
| **IMR** | -0.236 | -5.015 *** | -0.221 | -4.754 *** | -0.247 | -5.271 *** | -0.230 | -4.927 *** |
| **Concentration** | 0.239 | 3.529 *** | 0.226 | 3.371 *** | 0.246 | 3.648 *** | 0.234 | 3.489 *** |
| **Fraction** | -0.068 | -5.322 *** | -0.065 | -5.164 *** | -0.070 | -5.511 *** | -0.066 | -5.246 *** |
| **meq** | 0.000 | -4.258 *** | 0.000 | -4.023 *** | 0.000 | -4.49 *** | 0.000 | -4.172 *** |
| **M/B** | -0.010 | -2.787 ** | -0.010 | -2.849 ** | -0.011 | -2.914 ** | -0.009 | -2.491 * |
| **D/E** | 0.000 | 4.159 *** | 0.000 | 4.316 *** | 0.000 | 4.119 *** | 0.000 | 4.224 *** |
| Adjusted R2 | | 0.0924 | | 0.109 | | 0.1006 | | 0.1064 |
| Degree of freedom | | 3732 | | 3732 | | 3732 | | 3732 |

If HF cross-holders attempt to monitor acquirer performance, it follows that they would expend monitoring efforts on the aspects of the deal-making that are prone to the agency problems. One well-known agency problem embedded in M&A transactions involves acquirers overpaying targets in takeovers. If HF cross-holders monitor, we should observe empirically that the HF cross-holder involvements in acquirers are associated with lower takeover premiums. Since Table 1.13 shows that only Type-1 HF cross-holders (strictly winning cross-holders) tend to be effective monitors of acquirer performance, I expect that the involvement of Type-1 HF cross-holders are associated with lower takeover premium. The results in Table 1.14 suggest that acquirer involvement by all three types of HF cross-holders are associated with lower takeover premiums.

Table 1.14 presents the regression results of the relations between HF cross-holder dummy variables and takeover premiums. The dependent variable – actual offer premium – is defined as [(bidder's offer / target's pre-bid market value of equity) – 1], following the procedure described in Gaspar et al. [2005] and Officer [2003]. Stage-1 model is a probit regression of the likelihood of a firm being targeted by HF activists. Stage-2 model is an OLS estimates following the Heckman's two-stage model procedure. Each of the cross-holder type represents a dummy variable that equals to 1 if an acquirer investor belongs to a particular type of cross-holders, or 0 otherwise. The results show that, even after adjusting for the sample-selection bias and controlling the relevant variables, all three sub-categories of the cross-holders are negatively associated with takeover premiums at 1% p-level. This implies that the presence of cross-holdings decrease the level of takeover premiums for all three types of cross-holders. Comparable results are shown for both HF activists and non-HF activists, corroborating with the view that cross-holders tend to curb the extent of overpayment in M&As.

Another well-known agency problem often embedded in M&A deals concerns the percentage of stock financing. Previous studies show that acquirer managements tend to make payments in stock when information between acquirers and targets is asymmetric[48]. Morever, the likelihood of stock payment goes up when acquirer stock is overvalued[49] or when the acquirer management is not majority shareholders of the company[50]. Thus, stock financing is usually associated with negative signaling effect

[48] Hansen [1987]
[49] Pecking order theory by Myers and Majluf [1984]; market-timing theory by Baker and Wurgler [2002].
[50] Amihud et al. [1990]

Table 1.15: Impact of Cross-holdings on Actual Offer Premium

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Coefficient | z value | |
|---|---|---|---|
| (Intercept) | -0.091 | -0.727 | |
| | | | |
| Status | -0.046 | -0.683 | |
| Attitude | -0.117 | -0.984 | |
| Tender offer | 0.005 | 0.113 | |
| **Percentage of Stock** | -0.002 | -5.472 | *** |
| | | | |
| Concentration | -0.985 | -0.912 | |
| **Fraction** | 0.416 | 5.81 | *** |
| | | | |
| D/E | 0.000 | 0.746 | |
| **meq** | 0.000 | 11.691 | *** |
| M/B | -0.015 | -1.71 | . |
| | | | |
| McFadden $R^2$ | | 0.027 | |
| # of observations | | 7168 | |

Panel B. Sample-selection corrected estimates for premium regressions

Second stage: OLS estimates (HF Activists)

| Dependent variable | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | -5.742 | -7.25 | *** | -6.085 | -7.641 | *** | -5.890 | -7.38 | *** | -6.138 | -7.712 | *** |
| | | | | | | | | | | | | |
| **crsownership_flg** | -0.401 | -8.634 | *** | | | | | | | | | |
| **strictly_winning_crshldr** | | | | -0.362 | -4.52 | *** | | | | | | |
| **loss_offsetting_crshldr** | | | | | | | -0.323 | -4.712 | *** | | | |
| **neg_overall_crshldr** | | | | | | | | | | -0.431 | -4.855 | *** |
| | | | | | | | | | | | | |
| Status | 0.045 | 0.608 | | 0.036 | 0.479 | | 0.056 | 0.743 | | 0.033 | 0.444 | |
| **Attitude** | 0.265 | 1.952 | . | 0.324 | 2.367 | * | 0.257 | 1.876 | . | 0.292 | 2.138 | * |
| **Tender_Offer** | 0.162 | 3.633 | *** | 0.171 | 3.807 | *** | 0.160 | 3.559 | *** | 0.160 | 3.568 | *** |
| **Pctg_of_Stock2** | -0.010 | -7.707 | *** | -0.010 | -8.183 | *** | -0.010 | -7.889 | *** | -0.010 | -8.072 | *** |
| | | | | | | | | | | | | |
| **IMR** | 6.076 | 6.861 | *** | 6.376 | 7.157 | *** | 6.214 | 6.966 | *** | 6.454 | 7.249 | *** |
| | | | | | | | | | | | | |
| **Concentration** | -3.434 | -2.696 | ** | -3.622 | -2.824 | ** | -3.543 | -2.763 | ** | -3.704 | -2.89 | ** |
| **Fraction** | 1.229 | 5.132 | *** | 1.279 | 5.306 | *** | 1.250 | 5.181 | *** | 1.299 | 5.391 | *** |
| | | | | | | | | | | | | |
| **meq** | 0.000 | 5.546 | *** | 0.000 | 5.817 | *** | 0.000 | 5.643 | *** | 0.000 | 5.899 | *** |
| **M/B** | -0.199 | -2.927 | ** | -0.212 | -3.095 | ** | -0.214 | -3.125 | ** | -0.196 | -2.859 | ** |
| **D/E** | 0.002 | 2.857 | ** | 0.002 | 2.932 | ** | 0.002 | 2.896 | ** | 0.002 | 2.965 | ** |
| | | | | | | | | | | | | |
| Adjusted $R^2$ | | 0.0737 | | | 0.05829 | | | 0.06082 | | | 0.0612 | |
| Degree of freedom | | 3732 | | | 3732 | | | 3732 | | | 3732 | |

that result in lower announcement CARs and long-term stock returns for acquirers[51]. Furthermore, the papers on issuer exchange offers and seasoned common stock offerings[52] show that new stock issues are negatively associated with the stock prices of the issuers, due to signaling effects. Since stock-financed M&A deals can be seen as "new stock issues + a takeover", it is not surprising that stock payments would negatively impact on acquirer performance for similar reasons.

Following this chain of thought, I conjecture that effective monitors in acquirers would exert monitoring efforts to reduce the level of stock financing in M&As. Under this conjecture, I expect the the presence of Type-1 cross-holders in acquirers is negatively associated with the percentage of stock financing, while the other sub-categories of cross-holders would not monitor stock financing.

> **Testable Hypothesis 2**: Type-1 cross-holders in acquirers is negatively associated with the percentage of stock financing, while the other sub-categories of cross-holders would not monitor stock financing.

Consistent with the predictions, the regression outputs from Table 1.15 show that Type-2 and Type-3 HF cross-holders are positively associated with the percentage of stock financing, while no evidence indicates that Type-1 HF cross-holders lead to higher percentage of stock financing. This finding is consistent for both HF activists and non-HF activists in both single-variate and multi-variate regressions. Only the multiple regression for HF cross-holders are reported in this paper.

Overall, I find evidence supportive of the hypothesis that cross-holders for both HF activists and non-HF activists create value by monitoring agency problems in M&A deals. In particular, I show that cross-holders who had retroactively realized positive wealth change around M&A deal announcements tend to be successful monitors of premiums and the level of stock financing in M&As. This result is consistent with the view that both HF-activists and non-HF activists create shareholder values in M&As through exerting monitoring and influencing efforts aiming at reducing agency cost in M&As.

[51] Travlos [1987], Asquith et al. [1990], Martin [1996], Schlingemann [2004], Savor and Lu [2009]
[52] Asquith and Mullins [1986]

Table 1.16: Impact of Cross-holdings on Percentage of Stock Financing

Panel A. Likelihood of being targeted by HF activists

First stage: Probit estimates

| | Coefficient | z value | |
|---|---|---|---|
| (Intercept) | -9.07E-02 | -0.727 | |
| Status | -4.55E-02 | -0.683 | |
| Attitude | -1.17E-01 | -0.984 | |
| Tender offer | 5.02E-03 | 0.113 | |
| **Percentage of Stock** | -2.07E-03 | -5.472 | *** |
| Concentration | -9.85E-01 | -0.912 | |
| **Fraction** | 4.16E-01 | 5.81 | *** |
| D/E | 2.91E-04 | 0.746 | |
| **meq** | 2.95E-06 | 11.691 | *** |
| M/B | -1.45E-02 | -1.71 | . |
| McFadden $R^2$ | | 0.027 | |
| Degree of freedom | | 7158 | |

Panel B. Sample-selection corrected estimates for percentage of stock financing

Second stage: OLS estimates (HF Activists)

| | Coefficient | t value | | Coefficient | t value | | Coefficient | t value | |
|---|---|---|---|---|---|---|---|---|---|
| (Intercept) | -581.600 | -150.723 | *** | -581.900 | -150.776 | *** | -581.100 | -150.105 | *** |
| **crsownership_flg** | 2.326 | 3.87 | *** | | | | | | |
| **loss_offsetting_crshldr** | | | | 3.507 | 3.98 | *** | | | |
| **neg_overall_crshldr** | | | | | | | 2.003 | 1.75 | . |
| **Status** | -15.560 | -16.706 | *** | -15.690 | -16.841 | *** | -15.550 | -16.661 | *** |
| **Attitude** | -44.180 | -27.515 | *** | -43.910 | -27.256 | *** | -44.490 | -27.704 | *** |
| **Tender offer** | -2.433 | -4.217 | *** | -2.397 | -4.154 | *** | -2.435 | -4.214 | *** |
| **IMR** | 664.500 | 180.38 | *** | 664.800 | 180.551 | *** | 664.400 | 179.543 | *** |
| **Concentration** | -480.700 | -33.103 | *** | -480.800 | -33.111 | *** | -480.700 | -33.044 | *** |
| **Fraction** | 167.300 | 114.149 | *** | 167.300 | 114.273 | *** | 167.400 | 113.985 | *** |
| **meq** | 0.001 | 154.246 | *** | 0.001 | 154.397 | *** | 0.001 | 153.735 | *** |
| **M/B** | 20.690 | 25.368 | *** | 20.790 | 25.515 | *** | 20.760 | 25.39 | *** |
| **D/E** | 0.186 | 24.864 | *** | 0.186 | 24.863 | *** | 0.186 | 24.84 | *** |
| Adjusted $R^2$ | | 0.9114 | | | 0.9114 | | | 0.9111 | |
| Degree of freedom | | 3733 | | | 3733 | | | 3733 | |

## 1.5 Conclusions

Critics of hedge-fund activism assert that the motivations of hedge fund activists are short-term in nature and thus they would not expend efforts on monitoring. This paper analyzes the verity of this claim by comparing investment horizons of HF and non-HF activists, based on their holdings in M&A acquirers and targets, and subsequently investigate whether HF activists and non-HF activists monitor and the extent of their monitoring prowess.

Using a combination of plots and regression analysis, I find evidence that HF activists are not as short-term oriented as some critics assert. While they tend to have shorter investment horizons than traditional institutional activists do, HF activists typically invest in acquirers for more than a year. Furthermore, the results from regression analysis suggest that both HF and non-HF activists are capable of monitoring both the short run and the long-run. The long-horizon analysis shows that even though HF activists and non-HF activists are associated with lower post-announcement buy-and-hold abnormal returns, they are associated with positive operating performance over the long run. In studying the non-performance related aspects of M&A transactions, I find that both HF activists and non-HF activists tend to be associated with lower percentage of stock financing, suggesting that both types of activists place monitoring efforts on the medium of payment in M&As. The only aspect of monitoring I find that HF activists and non-HF activists differ is the deal completion status. The regression results show that while the presence of HF activists lower the likelihood of M&A deal completion, the presence of non-HF activists actually increase the likelihood of deal completion.

In addition to study the impacts of activist involvements in acquirers, I also extend the analysis to cover activist cross-holdings. I conjecture that activist cross-holders, with exposures to both sides of the M&A transactions, would also specialize in the monitoring efforts in order to create shareholder values. In particular, activist cross-holders who had retroactively realized positive gains tend to be effective monitors of acquirers at the first place, except for "empty voters". In this effort, I divide activist cross-holders into three sub-categories: Type-1 (i.e., strictly-winning) cross-holders, Type-2 (i.e., loss-offsetting) cross-holders, Type-3 (i.e., negative-overall) cross-holders. The regression results show that Type-1 cross-holders (i.e., strictly-winning cross-holders) are associated with higher acquirer

CARs, while the two other sub-categories of cross-holders are negatively associated with negative acquirer CARs, indicating that the involvement of Type-1 cross-holders are conducive for superior acquirer announcement-window performance. Moreover, I find that all sub-categories of activist cross-holders are associated with lower takeover premiums, lending support to the view that activists cross-holders monitor. The findings by regressing the percentage of stock financing on activist cross-holding dummies also indicate that both Type-2 and Type-3 cross-holders are associated with higher level of stock financing, except for Type-1 cross-holders. This result further supports the view that activist cross-holders make gains in M&As through monitoring efforts.

Kahan and Rock [2007]note that traditional activists only focus on corporate governance activism, while HF activists not only focus on corporate governance activism, but also focus on corporate control activism. In this study, I show empirically that both HF activists and non-HF activists exert monitoring efforts on the short-term / long-term performance of acquirers and the means of payment in M&As. While non-HF activists don't actively initiate corporate control activism campaigns, I find that their involvements in acquirers are associated with positive results. Meanwhile, I find that HF-activist involvements in acquirers lead to higher operating performance over the long run, lending support to the opposite side of the critique pointing to hedge-fund short-termism. Cross-holding analysis on HF activists and traditional activists lend further support to the hypothesis that both groups of activists make gains in M&As through monitoring.

# CHAPTER 2

# IMPACT OF HORIZONTAL MERGERS ON M&A RIVALS

## 2.1 Introduction

In this paper, I study how the announcements of horizontal takeovers impact the returns of target rivals. Large institutional investors often need to decide how to vote on a proposed takeover, or whether to accept or reject or tender in a takeover attempt. In theory, such decisions should be straightforward. If the net portfolio impact of the proposed takeover is positive, then a yes vote is probably indicated. Conversely, a nay vote should be casted. In practice, however, the net portfolio impact of a proposed takeover could be difficult to assess. A large institutional investor with diversified holdings often not only own shares of the merging firms, but also may have stakes in the other related parties, such as the rivals of acquirers and targets. Thus, to assess the net portfolio impact, one needs to take into account not only the impacts of takeovers on acquirers and targets, but also need to understand the stock price reactions of their rival firms as well.

The preponderance of papers examining the rival abnormal returns during the proposed takeover announcement window found small but positive abnormal returns to target rivals. Three lines of explanations have been offered in the literature in an attempt to explain the source of gains to target rivals. The earliest theory, also known as the collusion hypothesis, posits that horizontal takeovers eliminate competition in the industry and facilitate collusions between the merging firms and their rivals. Yet, Eckbo [1983, 1985, 1992], Fee and Thomas [2004], Shahrur [2005] all found evidence inconsistent with the collusion hypothesis. An alternative explanation, also known as the productive efficiency hypothesis, contends that horizontal takeovers are driven by productive efficiency motives. Most papers found

positive announcement-window abnormal returns to target rivals[1]. Thus the collective evidence is consistent with the productive efficiency hypothesis. Song and Walkling [2000] propose an additional conjecture, also called the acquisition probability hypothesis, to explain the positive target rival abnormal returns. That is, rivals earn positive abnormal returns because of the increased probability that the rivals will become takeover targets themselves. This hypothesis addresses why only a fraction of target rivals (i.e., ~ 50%) earn positive announcement-period returns and this hypothesis is unrestricted to the forms of restructuring (horizontal v. vertical takeovers) or deal status (completed v. withdrawn).

All the previous analysis, to my knowledge, identify rivals through pooling together all the firms sharing the same industry sector with either the acquirer or the target firms. This approach measures the announcement-period rival returns using either value-weighted or equal-weighted rival portfolio returns. The upside of this approach is that by linking all the firms within the same industry as the acquirers or the targets it increases the sample size and thus mitigates the small-sample problem. The downside of this approach is that it treats all the industry peer firms as rivals, without censoring for size and firm valuation, and thus might accidentally downplay the magnitude of impact on the most direct rivals. This paper, instead, defines rivals as the industry peers that are most comparable to the target firms, based on the 20 x 20 Fama-French portfolios formed on size and book-to-market ratio. This approach generates a unique rival firm for each target firm and results in 575 pairs of target and rival in the final analysis sample.

This paper examines the expanded version of the acquisition probability hypothesis by using a different method in identifying rivals and a newer dataset. Unlike the previous studies on M&A rivals, I didn't find positive and significant cross-sectional returns to target rivals during the takeover proposal announcement window. Partitioning the rivals into groups associated with value-creating deals and value-destroying deals[2], however, shows that only rivals associated with value-creating deals (i.e., positive CWE returns) experience positive and significant announcement-period abnormal returns. Similar to the previous findings, I found that the rival announcement-period abnormal returns are positively associated with the target announcement-period abnormal returns. Additionally, I found

[1] Eckbo [1983,1985], Mitchell and Mulherin [1996], Fee and Thomas [2004], Shahrur [2005]

[2] Value-creating deals and value-destroying deals are identified as deals with positive and negative combined wealth effect returns (CWE returns), respectively.

that the announcement-period cross-sectional returns to target rivals are also positively associated with the target rival returns around the deal effective days and deal withdrawn days, the result of which goes beyond the predictions of the productive efficiency hypothesis and lends support to the acquisition probability hypothesis. Further analysis confirms the hypothesis that the higher probability of the rivals becoming targets within a year after the initial takeover announcements significantly explains the announcement-period rival abnormal returns.

This paper is structured as follows. Section 2 review the relevant literature and develop the testable hypotheses for this paper. Section 3 provides the detailed information on forming the data sample and the methodology used to identify target rivals. The empirical analysis and results are presented in section 4. Section 5 summarizes the findings and concludes the paper.

## 2.2 Background and hypothesis

The studies most closely related to this paper are those that study the spillover effects of takeover announcements on target rivals and those that investigate the underlying causes for the source of gains target rivals experience around the takeover announcements.

Mitchell and Mulherin [1996], studying the takeovers and restructuring activities in the 1980s, show that much of the takeover activities in the 1980s are direct responses to the industry shocks (i.e., technological, regulatory, or economic changes) borne by the sample industries and have positive implications for the valuations of other industry members. Through examining the abnormal returns for the value-weighted portfolio of firms in the same industry, they found small but positive portfolio returns of the other firms in the month of the deal announcement. This result concurs with the earlier and later studies[3] on the price effects of industry rivals during the takeover announcement windows.

The most widely tested explanation for rival value gains is that horizontal mergers eliminate competition in the industry and lower the barrier for collusion among the remaining industry players, also known as the collusion hypothesis. This hypothesis implies that announcements of the horizontal mergers should have positive price effect on the rivals, whereas interventions by either Federal Trade Commission (FTC) or Justice Department in the form of antitrust complaints should bring about

[3]Eckbo [1983], Slovin et al. [1991], Song and Walkling [2000], Fee and Thomas [2004], Shahrur [2005]

negative price effect on the rivals. Yet, the three decades of empirical papers[4] testing the collusion hypothesis all rejected the hypothesis.

An alternative explanation to the positive revaluations for the industry rivals over takeover announcements is that takeovers and restructuring activities are driven by productive efficiency motives. This hypothesis asserts that horizontal mergers are conducive to achieve the economy of scale required to unleash greater efficiency gains to both bidders and targets. After consumation of horizontal mergers, the merging firms could leverage the scaled economy to become a more competitive unit with the power to bargain for lower factor price with their upstream suppliers (i.e., greater buying power). This hypothesis implies two folds of price effects on industry rivals and indicates mixed signs (+/-) to the rival firms during the deal announcement windows. If the merging firms emerge to become a more efficient competitor relative to their rivals as a result of the takeover (i.e., competition effect), then the takeover announcement should negatively impact on the returns of the rivals. On the other hand, however, if rival firms get to benefit from the extent of efficiency gains, such as a lower factor price or higher output price (i.e., factor/output price effect), then the takeover announcement should engender a positive impact the returns of rivals. The final impact depends on how the two effects offset each other in combination. Since most studies to date found positive price impacts to industry rivals, the collective results appear to suggest that the efficiency argument dominates. I am not aware of any study that has rejected the efficiency hypothesis as the explanation for the positive valuation effective rival firms experience over the deal announcement window yet.

Song and Walkling [2000] offer a fresh perspective through a conjecture that the positive revaluation happening to industry rivals over the announcement window might be due to an increased likelihood that the rivals will become subsequent takeover targets themselves, also known as the acquisition probability hypothesis. Unlike the productive efficiency hypothesis, which is mainly tested based on samples consisted of completed horizontal mergers, the acquisition probability hypothesis is unrestricted to the forms of the restructuring (i.e., horizontal merger or vertical merger) or the deal status (completed deal vs. withdrawn deal). Song and Walkling [2000] mainly test this hypothesis through three channels. That is, rival firms earn positive abnormal returns during the takeover announcement window, rivals that are subsequently acquired experience higher announcement returns,

[4]Eckbo (1983, 1985, 1992), Stillman [1983], Eckbo and Wier [1985], Fee and Thomas [2004], Shahrur [2005].

and that the cross-sectional variation in the announcement-period abnormal returns to rivals is positively related to the probability of acquisition. In contrast to the first two hypotheses, the empirical validation of acquisition probability hypothesis does not rely exclusively on event-study approach and also, the empirical design of test is also more direct.

This paper extends the empirical design of Song and Walkling [2000] to incorporate analysis over the merger-termination and merger-completion windows. Song and Walkling [2000] assert that the positive value effect to rivals during the announcement window is due to an increased probability that the rivals will become takeover targets themselves. I hypothesize that if the acquisition probability hypothesis holds, then rivals should be impacted during the merger termination window and merger completion window as well. In comparison to the signaling effect over the announcement window, the deal termination window and the deal completion window could confer different information.

If the deal termination happened due to a worsened industry outlook, for example, it signals that the probability of rivals becoming takeover targets down the road is lower, and hence the rival returns should be adversely impacted as a result of deal termination. However, if the deal termination happened because the merging parties failed to reach a concensus on the deal terms, then the aborted deals should signal an increased probability that rivals will become the next targets, and subsequently the rival returns should experience a positive valuation effect. Since the merger waves are the likely responses to industry-wide external shocks (Mitchell and Mulherin [1996]), I conjecture that the first scenario where industry outlooks would hinder the completion of takeovers is less likely, relative to the second scenario where deals fall through due to difficulties in reaching a bilateral agreement. Hence, the combined effect for rivals over the deal termination window should be positive. If an announced deal consumates successfully, then it signals that the rivals will not only become more likely targets themselves but are also more likely to lock in the amount of value creation by completing the deals. It follows that the target rivals should experience positive value effect over the deal effective-day window, or deal-completion window. If the empirical results are found to be consistent with these extended hypotheses, then more support is offered to the acquisition probability hypothesis.

Combining the original hypotheses from Song and Walkling [2000] with the extended hypothesis, I present a descriptive summary of the testable hypotheses for this paper below:

[*Testable Hypothesis* 1] The rival firms earn (on average) significantly positive returns during the deal announcement window;

[*Testable Hypothesis* 2] The rival effective-period abnormal returns and rival withdrawn-period abnormal returns are positively related to the rival announcement-period abnormal returns;

[*Testable Hypothesis* 3] The cross-sectional returns of rival firms over the deal announcement window are systematically related to the probability of acquisition.

## 2.3 Data and methodology

This paper tests the expanded version of acquisition probability hypothesis based on horizontal M&A deals from 1993 to 2012. All the M&A related data, including announcement date, effective date, withdrawn date, and other information pertaining to different aspects of deal characteristics, are obtained from Thomason Reuters SDC platinum database. The daily stock price information is obtained from CRSP. All the accounting measures used to assemble firm characteristics (e.g., size, book-to-market ratios, Altman's Z score, etc.) are obtained from COMPUSTAT database. In this paper, horizontal mergers are characterized as mergers for which the bidders and targets are included in the same Fama-French 48 industry sector. Additionally, Fama French 20x20 size and book-to-market ratios portfolios are obtained from Kenneth R. French's data library online.

All the deals included in the analysis sample meet the following criteria.

1. The takeover form is reported to be either merger, acquisition, or acquisition of majority interest.
2. Retain only deals that are either completed or withdrawn.
3. Select deals with 'deal attitude' marked as friendly, neutral, unsolicited, or hostile.
4. Subset deals where bidder and target belong to the same 48 Fama-French industry group.
5. Based on the remaining deals in the sample, choose a rival firm for each of the target firm based on comparability (see section 3.1).

6. Match the relevant COMPUSTAT financials to each target firm and each rival firm in the sample, based on ticker symbol.

7. Attach the relevant CRSP stock return measures with each target firm and each rival firm in the sample, based on ticker symbol.

This process generates 575 takeover deals that met the sample formation criteria. The summary statistics for these deals are presented in the Table 1. As reported in Panel A of Table 2.1, considerable heterogeneity is found in the frequency of deals by year. The average ratio of the bidder market value of equity (MVE) to the target market value of equity is 28.56 for the entire sample. Panel B reports the aggregated deals into broad industries based on the Fama-French 48 industry groups. The six industries with the most horizontal deals are banking, business services, pharmaceutical products, electronic equipment, medical equipment, computers. Among these six industries, about 42% of the horizontal mergers in the final sample are in the banking sector. Together, these six industries account for 79% of horizontal takeover deals in the analysis sample. Panel C summarizes the characteristics of the deals in the analysis sample. For each deal included in the analysis sample, I collect data from SDC on the deal status (completed or withdrawn), deal attitude (hostile or friendly), tender offer flag (1 = tender offer or 0 = non-tender offer), and the proposed deal-financing consideration (cash or stock).

### 2.3.1 Identifying target rivals

Previous papers examining the spillover effect of takeovers on industry rivals identify rivals as any firms, beside the bidder or target, that report in the same industry group in which the bidder or target overlap and report the rival returns as either the equal-weighted or value-weighted portfolio returns. This paper identifies a unique control firm for each of the takeover target. The selection process begins by sorting out all the firms in the same industry sector as the target firms. From this pool, I sift out all the potential rival firms included in the same Fama-French 20x20 book-to-market ratio grid as the target. Finally, the rival firm of choice is picked as the one with the smallest market value of equity (MVE) difference to the target.

To see whether the chosen rival firms are good matches to the target firms, I compute the financial comparables and the performance comparables between targets and their matching rival firms. Table

Table 2.1: Sample description

| Year | Deals | Percentage | Average bidder MVE ($ millions) | Average target MVE ($ millions) | bidder MVE / Target MVE |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |
| *Panel A: frequency of deals by year* | | | | | |
| *1993* | 7 | 1.22 | 3.32 | 0.31 | 10.55 |
| *1994* | 11 | 1.91 | 1.17 | 0.23 | 5.03 |
| *1995* | 19 | 3.30 | 4.27 | 0.28 | 15.05 |
| *1996* | 22 | 3.83 | 4.31 | 1.23 | 3.52 |
| *1997* | 23 | 4.00 | 4.92 | 0.89 | 5.52 |
| *1998* | 28 | 4.87 | 7.43 | 2.73 | 2.72 |
| *1999* | 22 | 3.83 | 27.38 | 0.71 | 38.83 |
| *2000* | 51 | 8.87 | 8.03 | 1.10 | 7.29 |
| *2001* | 36 | 6.26 | 10.90 | 0.72 | 15.10 |
| *2002* | 26 | 4.52 | 25.89 | 0.10 | 246.72 |
| *2003* | 48 | 8.35 | 2.88 | 0.25 | 11.31 |
| *2004* | 37 | 6.43 | 8.12 | 0.48 | 16.77 |
| *2005* | 35 | 6.09 | 20.58 | 1.55 | 13.27 |
| *2006* | 36 | 6.26 | 15.51 | 2.29 | 6.77 |
| *2007* | 33 | 5.74 | 2.73 | 0.32 | 8.43 |
| *2008* | 34 | 5.91 | 15.63 | 0.64 | 24.53 |
| *2009* | 13 | 2.26 | 28.16 | 0.26 | 108.65 |
| *2010* | 44 | 7.65 | 15.07 | 0.76 | 19.88 |
| *2011* | 31 | 5.39 | 11.60 | 1.49 | 7.79 |
| *2012* | 19 | 3.30 | 1.34 | 0.39 | 3.42 |
| All deals | 575 | 100 | 10.96 | 0.84 | 28.56 |
| *Panel B: frequency of deals by industry* | | | | | |
| Banking | 243 | 42% | 5.41 | 0.58 | 9.32 |
| Business Services | 93 | 16% | 12.06 | 0.54 | 22.38 |
| Pharmaceutical Products | 38 | 7% | 46.36 | 1.23 | 37.81 |
| Electronic Equipment | 38 | 7% | 5.99 | 1.20 | 4.99 |
| Medical Equipment | 22 | 4% | 11.41 | 1.29 | 8.81 |
| Computers | 20 | 3% | 33.14 | 0.63 | 52.77 |
| *Panel C: deal characteristics* | | | | | |
| Withdrawn | 57 | 9.91% | 2.85 | 0.74 | 3.83 |
| Hostile | 28 | 4.87% | 3.87 | 0.77 | 5.02 |
| Tender offers | 69 | 12.00% | 21.30 | 0.75 | 28.49 |
| Cash consideration | 191 | 33.22% | 23.17 | 0.54 | 42.83 |
| Stock consideration | 203 | 35.30% | 6.10 | 1.08 | 5.66 |

Table 2.2: Target and Rivals - Financials comparable

| | Target - Summary Statistics | | | Target - Difference with Rivals | | |
|---|---|---|---|---|---|---|
| | Mean | Median | SD | Avg.Diff | p-value | Significance |
| Firm Characteristics | (1) | (2) | (3) | (4) | (5) | (6) |
| MVA | 1,478.58 | 157.71 | 11,122.98 | -721.63 | 0.45 | |
| meq | 822.14 | 101.52 | 4,066.08 | -85.67 | 0.67 | |
| Market Cap | 813.16 | 98.75 | 4,000.63 | -77.70 | 0.73 | |
| Market-to-Book | 1.25 | 0.68 | 2.06 | -0.41 | 0.11 | |
| P/E ratio | 6.24 | 10.70 | 127.63 | -7.75 | 0.13 | |
| q | 1.79 | 1.08 | 2.58 | -0.94 | 0.12 | |
| FCF | 70.59 | 5.65 | 458.14 | -46.42 | 0.24 | |
| ROA | -0.02 | 0.02 | 0.25 | 0.00 | 0.77 | |
| AT return | 0.09 | 0.03 | 0.66 | -0.11 | 0.02 | ** |
| Profitability | -0.02 | 0.02 | 0.25 | 0.00 | 0.70 | |
| Sale's Growth | 0.25 | 0.06 | 1.08 | -0.26 | 0.25 | |
| Altman's Z score | -0.62 | 0.19 | 4.68 | -0.20 | 0.41 | |
| Leverage1 - d2e | 5.00 | 1.22 | 31.52 | 3.94 | 0.03 | ** |
| Leverage2 - d2a | 0.17 | 0.12 | 0.18 | 0.00 | 0.83 | |

2.2 presents the results of financial comparables. The first three columns report the summary statistics of the target firms, and the latter three columns show the average differences between target firms and their matching rival firms for a list of chosen financial measures. The results indicate that target firms and their matching rival firms tend to be very comparable matches, based on the firm size measures, as proxied by market value of asset (MVA), market value of equity (meq), and market capitalization (Market Cap), and the firm valuation measures, as proxied by market-to-book ratio, price/earning ratio (P/E ratio), Tobin's Q ratio (Q), and free cash flow (FCF). The only appreciable differences between target firms and their matched rival firms seem to be that the target firms tend to be slightly less profitable, according to the return on asset ratio (AT return), and somewhat more leveraged, in terms of the debt-to-equity ratio (Leverage 1 - d2e). Yet, all the other profitability measures (i.e., ROA, profitability, and sale's growth) and financial distress measures (i.e., Altman's Z score, debt-to-asset ratio) appear to be indistinguishable.

Taking into account that financially comparable firms might also have differing ex-ante stock performances, I compiled the performance comparables between targets and their matching rival firms, as shown in 2.3. Three groups of performance comparables are computed. The first group compares the announcement-window abnormal returns between the targets and their matching rival firms. The second group compares the ex-ante stock returns between the targets and their matching rivals. The third group compares the ex-ante operating performance between targets and their matching rivals. The result shows that aside from very different announcement-window stock returns, targets and their matching rivals are indistinguishable from each other, based on their ex-ante stock and operating performances. In sum, Table 2.3 provides supportive evidence that targets and their matching rivals are very comparable in their ex-ante performances.

Table 2.2 and Table 2.3 jointly show that the rivals identified in this paper are qualitatively indistinguishable from their matching target firms in the analysis sample. Therefore, these rivals are eligible to be used as the treatment group to analyze the spillover effect of takeovers on target rivals. Section 4 proceeds with the empirical investigation, based on the sample consisting of the 575 pairs of targets and their matching rival firms.

## 2.4 Empirical results

### 2.4.1 Announcement-window abnormal returns

Abnormal returns of target rivals over the deal proposal announcement window is commonly used to test a number of hypotheses relating to the spillover effect of takeovers on rivals. Among these hypotheses, productive efficiency hypothesis predicts unrestricted signs (+/-) to rival abnormal returns, collusion hypothesis and buying power hypothesis posit positive rival abnormal returns. Empirically, most of the previous papers find positive abnormal returns to rivals during the deal proposal announcement window (Eckbo [1983], Song and Walkling [2000], Fee and Thomas [2004], Shahrur [2005]), where rival abnormal returns are defined as the equally-weighted returns of all rivals associated with a given deal.

This paper identifies rivals as the most comparable firm to each target firm, based on Fama-French

Table 2.3: Target and Rivals - Performance Comparable

CORPORATE TABLE

| Performance Measurements | Mean | Median | Max | Min | StDev | Count | Pctg > 0 |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 【Targets】[-1 : 1] Announcement Returns | 26.69% | 20.09% | 258.14% | -28.05% | 29.25% | 443 | 91% |
| 【Rivals】 [-1 : 1] Announcement Returns | -0.16% | 0.00% | 24.00% | -25.81% | 5.08% | 443 | 46% |
| 【Targets】1-yr ex-ante stock returns | 19.81% | 2.22% | 1397.62% | -96.89% | 125.51% | 429 | 56% |
| 【Rivals】 1-yr ex-ante stock returns | 19.66% | 5.17% | 803.64% | -99.06% | 82.83% | 420 | 59% |
| 【Targets】2-yr ex-ante stock returns | 21.47% | -2.77% | 2843.75% | -89.01% | 178.51% | 403 | 58% |
| 【Rivals】 2-yr ex-ante stock returns | 17.22% | -0.77% | 2959.68% | -87.80% | 165.42% | 392 | 62% |
| 【Targets】Adjusted 1-yr ex-ante ROAs | -3.24% | -0.06% | 60.72% | -1251.52% | 61.40% | 443 | 48% |
| 【Rivals】 Adjusted 1-yr ex-ante ROAs | -0.48% | 0.04% | 86.08% | -424.08% | 27.26% | 443 | 51% |
| 【Targets】Adjusted 2-yr ex-ante ROAs | -2.40% | -0.23% | 59.81% | -155.63% | 18.59% | 429 | 45% |
| 【Rivals】 Adjusted 2-yr ex-ante ROAs | -1.30% | -0.05% | 105.58% | -388.71% | 28.39% | 418 | 53% |

48 industry groups, book-to-market ratio, and size measures. Therefore, in contrast to the previous studies that compute rival returns by taking average of equal-weighted portfolio returns for each target on each day, rival abnormal returns in this paper, $AR_t$, are calculated by taking average of abnormal returns of unique rival firms on each day, as follows:

$$AR_t = \frac{\sum_1^N U_{j,t}}{N}$$

where $U_{j,t}$ is the abnormal return of rival firm $j$ on day $t$, estimated using a market model, and $N$ is the number of rival firms that have recorded abnormal returns on day $t$. The results of the abnormal returns during the 30 day announcement-window (-14 : 15) centered on the announcement day (i.e., day 0) is reported in Table 2.4. Columns (1) - (4) present the results of daily abnormal returns for targets; columns (5) - (8) show the results of daily abnormal returns for target rivals. As expected, I find that targets tend to experience significantly positive abnormal returns around the announcement day, consistent with the collective evidence in the M&A literature. Yet, target rivals do not experience any statistically significant abnormal returns around the announcement day.

Shahrur [2005], dividing sample of takeovers into those associated with positive combined wealth effect (CWE) and those associated with negative combined wealth effect, find that rivals associated with positive CWE deals experience positive and significant abnormal returns, whereby rivals associated with negative CWE deals undergo negative and significant abnormal returns. In other words, rivals associated with value-creating deals (i.e., positive CWE) tend to outperform, whereas rivals asociated with value-destroying deals (i.e., negative CWE) tend to underperform, around the deal proposal announcements. By the same token, I partition my analysis sample of takeovers into positive and negative CWE deal groups, and compute the summary statistics for the abnormal returns of each group of targets and rival firms. CWE return is defined as the cumulative abnormal return (CAR) to a value-weighted portfolio of the bidder and the target. The results are presented in Table 2.5.

Consistent with the prediction, Table 2.5 suggests that both targets and their matching rivals tend to experience positive cumulative abnormal returns (CAR) for value-creating deals and tend to undergo negative cumulative abnormal returns for value-destroying deals, shown by the mean and median statistics. This result is consistent for the CARs measured over the 3-day ([-1 : 1]), 5-day ([-2

Table 2.4: Target and rival announcement-window abnormal returns

| Public Targets (1993 - 2012) | | | | Rivals (1993 - 2012) | | | |
|---|---|---|---|---|---|---|---|
| Day rank | Avg AR | t statistics | | Day rank | Avg AR | t statistics | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| -9 | 0.0010 | -0.5498 | | -9 | -0.0006 | -0.7487 | |
| -8 | 0.0024 | 0.2695 | | -8 | -0.0008 | -0.8914 | |
| -7 | 0.0040 | 1.2394 | | -7 | 0.0000 | -0.4272 | |
| -6 | 0.0047 | 1.6778 | | -6 | 0.0007 | -0.0216 | |
| -5 | 0.0048 | 1.7418 | * | -5 | 0.0030 | 1.2025 | |
| -4 | 0.0055 | 2.1766 | ** | -4 | 0.0029 | 1.1536 | |
| -3 | 0.0050 | 1.8530 | * | -3 | -0.0012 | -1.0879 | |
| -2 | 0.0016 | -0.1806 | | -2 | 0.0005 | -0.1369 | |
| -1 | 0.0110 | 5.5070 | *** | -1 | -0.0025 | -1.8048 | |
| 0 | 0.1635 | 98.7247 | *** | 0 | 0.0000 | -0.4200 | |
| 1 | 0.0678 | 40.2717 | *** | 1 | -0.0006 | -0.7673 | |
| 2 | 0.0007 | -0.7442 | | 2 | 0.0014 | 0.3271 | |
| 3 | -0.0009 | -1.7310 | | 3 | 0.0017 | 0.5141 | |
| 4 | 0.0022 | 0.1262 | | 4 | 0.0030 | 1.2315 | |
| 5 | 0.0011 | -0.5193 | | 5 | 0.0008 | 0.0343 | |
| 6 | -0.0003 | -1.3622 | | 6 | 0.0015 | 0.3814 | |
| 7 | 0.0008 | -0.7163 | | 7 | -0.0005 | -0.7084 | |
| 8 | 0.0022 | 0.1769 | | 8 | 0.0015 | 0.4204 | |
| 9 | 0.0018 | -0.0846 | | 9 | -0.0007 | -0.7938 | |
| 10 | -0.0011 | -1.8741 | | 10 | 0.0021 | 0.7428 | |

Table 2.5: Target and rival announcement-window CARs by combined wealth effect (CWE)

Target and rival announcement-window CARs are measured over three different event windows: CAR3 is measured over one day before the announcement date to the day after the announcement date [-1 : 1], CAR5 is measured over two days before the announcement date to the two days after the announcement date [-2, 2], CAR5 is measured over three days before the announcement date to three days after the announcement date [-3, 3]. CWE is short for combined wealth effect, measured by combining the value-weighted CARs of acquirers and targets over the announcement window.

| | Positive CWE | | | | | |
|---|---|---|---|---|---|---|
| | Mean | Median | Max | Min | SD | Count |
| target_CAR3 | 0.2884 | 0.2215 | 2.3500 | (0.2297) | 0.2879 | 278 |
| target_CAR5 | 0.3140 | 0.2367 | 2.4487 | (0.2437) | 0.3021 | 278 |
| target_CAR7 | 0.3140 | 0.2459 | 2.4359 | (0.1965) | 0.3034 | 278 |
| rival_CAR3 | 0.0031 | 0.0000 | 0.1900 | (0.2535) | 0.0474 | 278 |
| rival_CAR5 | 0.0073 | 0.0000 | 0.4219 | (0.4903) | 0.0770 | 278 |
| rival_CAR7 | 0.0135 | 0.0087 | 0.8491 | (0.4859) | 0.1009 | 278 |

| | Negative CWE | | | | | |
|---|---|---|---|---|---|---|
| | Mean | Median | Max | Min | SD | Count |
| target_CAR3 | 0.1396 | 0.1108 | 2.5814 | (0.2805) | 0.2532 | 175 |
| target_CAR5 | 0.1431 | 0.1068 | 2.7308 | (0.3293) | 0.2654 | 175 |
| target_CAR7 | 0.1453 | 0.1131 | 2.8307 | (0.4000) | 0.2766 | 175 |
| rival_CAR3 | (0.0042) | (0.0008) | 0.1370 | (0.2581) | 0.0459 | 175 |
| rival_CAR5 | (0.0077) | (0.0071) | 0.1957 | (0.2840) | 0.0581 | 175 |
| rival_CAR7 | (0.0100) | 0.0000 | 0.3085 | (0.3317) | 0.0893 | 175 |

: 2]), and 7-day ([-3 : 3]) announcement windows.

If rivals associated with value-creating deals tend to experience higher announcement-period CARs, then they should also experience statistically significant and positive abnormal returns on the daily basis around the deal announcements. To verify this result, I repeat the analysis for calculating the abnormal returns for targets and their matching rivals around the deal announcements. Unlike Table 2.4, I divide the takeover sample into value-added versus value-destroying deals and present the results in Table 2.6. Column (1) - (9) report the results for the two groups of target firms (i.e., positive CWE v. negative CWE) in the analysis sample and column (10) - (18) present the results for the two groups of rival firms (i.e., positive CWE v. negative CWE) in the analysis sample.

Consistent with the previous findings, target firms tend to generate significantly positive abnormal returns around the deal announcements, whether or not they are associated with value-created or value-destroying deals. On the other hand, only rival firms associated with value-creating deals tend to experience statistically significant and positive abnormal returns around the deal announcements, based on the 2nd-day ex-post rival abnormal return. I find no evidence that rivals associated with value-destroying deals experience any statistically significant abnormal returns within the announcement window.

Table 2.6 shows that only rival firms associated with value-creating deals are associated with positive and significant abnormal returns. One explanation is that value-creating deals are more likely to be driven by productive efficiency. Hence, rivals associated with value-creating deals could experience positive abnormal returns as rivals benefit from the efficiency increase, due to the lower factor price (higher buying power) or higher output price (collusion leading to higher monopolistic rent). An alternative explanation is that rivals associated with value-creating deals are more likely to become the subsequent targets, and therefore this finding is also consistent with the prediction of acquisition probability hypothesis. The following section investigates the acquisition probability hypothesis as the explanation for the positive rival abnormal returns.

Table 2.6: Target and rival announcement-window abnormal returns organized by value-creation and value-destroying deals

| | | Targets (1993 - 2012) | | | | | | | | Rivals (1993 - 2012) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Positive CWE | | | | Negative CWE | | | | Positive CWE | | | | Negative CWE | | | |
| day | | abnormal | | | | abnormal | | | | abnormal | | | | abnormal | | | |
| rank | | return | t stats | | %Pos. | return | t stats | | %Pos. | return | t stats | | %Pos. | return | t stats | | %Pos. |
| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) |
| -9 | -0.002 | | -1.142 | | 44.00% | 0.001 | -0.117 | | 48.03% | -0.001 | -1.032 | | 41.22% | -0.001 | -0.677 | | 44.00% |
| -8 | 0.004 | | 0.735 | | 47.43% | 0.003 | 0.441 | | 49.46% | 0.000 | -0.473 | | 44.44% | 0.003 | 0.561 | | 45.71% |
| -7 | 0.001 | | -0.021 | | 43.43% | 0.003 | 0.490 | | 50.18% | 0.003 | 0.818 | | 47.67% | -0.002 | -0.764 | | 41.71% |
| -6 | 0.005 | | 1.248 | | 49.71% | 0.007 | 1.362 | | 50.18% | 0.002 | 0.261 | | 49.10% | -0.002 | -0.742 | | 42.29% |
| -5 | 0.010 | | 2.866 | *** | 50.86% | 0.006 | 1.180 | | 53.05% | 0.003 | 0.667 | | 50.54% | 0.005 | 1.350 | | 40.57% |
| -4 | 0.008 | | 1.990 | * | 49.71% | 0.006 | 1.137 | | 49.82% | 0.003 | 0.811 | | 45.16% | 0.001 | 0.115 | | 45.14% |
| -3 | 0.007 | | 1.637 | | 54.86% | 0.007 | 1.519 | | 51.25% | 0.000 | -0.536 | | 46.59% | -0.002 | -0.909 | | 45.14% |
| -2 | 0.005 | | 1.033 | | 48.57% | 0.000 | -0.499 | | 43.37% | 0.002 | 0.404 | | 49.46% | -0.005 | -1.627 | | 46.29% |
| -1 | 0.011 | | 3.227 | *** | 52.57% | 0.016 | 3.932 | *** | 56.63% | 0.001 | -0.235 | | 42.65% | -0.002 | -0.729 | | 36.57% |
| 0 | 0.087 | | 27.947 | *** | 68.57% | 0.186 | 51.209 | *** | 83.15% | 0.003 | 0.578 | | 47.31% | -0.003 | -1.154 | | 37.14% |
| 1 | 0.049 | | 15.560 | *** | 53.71% | 0.098 | 26.831 | *** | 69.53% | 0.000 | -0.653 | | 47.31% | -0.002 | -0.777 | | 49.14% |
| 2 | -0.007 | | -2.642 | | 34.86% | 0.005 | 0.908 | | 51.61% | 0.007 | 2.105 | ** | 52.33% | -0.001 | -0.643 | | 37.14% |
| 3 | -0.002 | | -1.206 | | 38.86% | 0.001 | -0.321 | | 47.31% | 0.002 | 0.451 | | 48.75% | 0.002 | 0.371 | | 49.14% |
| 4 | 0.005 | | 1.239 | | 52.57% | 0.001 | -0.183 | | 44.80% | 0.002 | 0.300 | | 47.67% | 0.001 | 0.074 | | 50.86% |
| 5 | 0.005 | | 1.006 | | 47.43% | 0.003 | 0.366 | | 51.25% | -0.002 | -1.249 | | 40.50% | 0.005 | 1.210 | | 48.00% |
| 6 | 0.003 | | 0.523 | | 47.43% | -0.001 | -0.748 | | 43.37% | 0.004 | 0.953 | | 41.22% | 0.003 | 0.658 | | 46.86% |
| 7 | -0.001 | | -0.759 | | 41.71% | 0.003 | 0.289 | | 44.09% | -0.001 | -0.971 | | 49.46% | 0.006 | 1.550 | | 51.43% |
| 8 | 0.003 | | 0.445 | | 42.86% | 0.001 | -0.151 | | 49.46% | 0.003 | 0.690 | | 45.88% | -0.001 | -0.627 | | 43.43% |
| 9 | 0.002 | | 0.137 | | 44.00% | 0.000 | -0.469 | | 45.16% | 0.000 | -0.350 | | 44.80% | -0.002 | -0.872 | | 40.57% |
| 10 | -0.001 | | -0.833 | | 44.00% | 0.001 | -0.116 | | 44.09% | 0.005 | 1.409 | | 46.24% | -0.004 | -1.588 | | 42.29% |

### 2.4.2 Announcement returns on rivals

If rivals experience positive, significant abnormal returns mainly because they are more prone to become the next targets, then higher announcement-period target CARs should be associated with higher rival announcement-period CARs, since rivals to targets associated with higher CARs are more likely to become the next targets. If this hypothesis is true, then I expect to see positive and significant relationship between rival announcement-period CARs and target announcement-period CARs, after controlling the relevant variables, as follows:

$$y = X_1\beta_1 + X_2\beta_2 + \epsilon$$

where $y$ is the rival announcement-period CARs. $X_1$ is the target firm announcement-period CARs and $X_2$ is a list of control variables representing various deal and firm characteristics.

Table 2.7 presents the result of the stepwise OLS regressions, relating the announcement-period CARs of rivals to the announcement-period CARs of targets. Three sets of control variables are considered, including those associated with deal characteristics, firm characteristics, and other deal-related variables. The first model is a univariate regression relating the announcement-period CARs of rivals to that of the matching targets. The second model is a multivariate regression relating the announcement-period CARs of rivals to that of the matching targets, after controlling for deal and firm characteristics. The third model extends the second model to include three other deal-related variables (value-creating deal flag, combined market shares, and target industry groups). All three models show a positive and significant relation between the announcement-period CARs of rivals and that of their matching targets, even after controlling for the relevant variables.

If the acquisition probability hypothesis holds, rivals should also experience positive and significant CARs around deal completion dates and deal withdrawn dates. This is because deal completion and deal withdrawn are embedded with different signals to the value of rivals. If takeovers consumate successfully, then it indicates that target shareholders are able to lock in the amount of value-creation through the takeovers on the deal completion dates. If takeovers are withdrawn, however, then the price of target firms would fall to the pre-announcement levels after the withdrawn dates. The probability

Table 2.7: Regressions of rival CARs on target CARs over the announcement-period window

OLS estimates

| Variables | Estimate | t value | | Estimate | t value | | Estimate | t value | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | | | (2) | | | (3) | | |
| (Intercept) | -0.0134 | -2.616 | ** | 0.0272 | 0.77 | | 0.0177 | 0.181 | |
| target CARs | 0.0603 | 4.521 | *** | 0.0396 | 2.222 | * | 0.0547 | 2.411 | * |
| attitude2 | | | | -0.0568 | -2.722 | ** | -0.0796 | -2.713 | ** |
| Payment2 | | | | 0.0121 | 1.12 | | 0.0198 | 1.33 | |
| HiTech-industry flag | | | | -0.0041 | -0.324 | | 0.0074 | 0.25 | |
| Tender-offer flag | | | | -0.0015 | -0.097 | | 0.0074 | 0.352 | |
| MktCap_rival | | | | 0.0002 | 1.001 | | 0.0001 | 0.348 | |
| M2B_rival | | | | -0.0100 | -0.506 | | -0.0283 | -0.763 | |
| Tobin_Q_rival | | | | 0.0141 | 0.711 | | 0.0313 | 0.828 | |
| ROA_rival | | | | -106.3000 | -1.339 | | -137.7000 | -1.37 | |
| d2e_rival | | | | 0.0009 | 2.822 | ** | 0.0005 | 0.991 | |
| FCF_rival | | | | 0.0000 | -0.164 | | 0.0000 | -0.279 | |
| AT_ret_rival | | | | 0.0328 | 2.206 | * | 0.0430 | 2.113 | * |
| Profitability_rival | | | | 106.3000 | 1.339 | | 137.7000 | 1.37 | |
| sale_grwth_rival | | | | 0.0022 | 0.276 | | -0.0026 | -0.13 | |
| MVA_rival | | | | 0.0000 | 0.762 | | 0.0000 | 0.772 | |
| meq_rival | | | | -0.0002 | -0.985 | | -0.0001 | -0.353 | |
| Altmans_Zscore_rival | | | | 0.0003 | 0.108 | | 0.0004 | 0.106 | |
| PE_ratio_rival | | | | 0.0000 | -0.294 | | -0.0001 | -0.61 | |
| d2a_rival | | | | -0.0318 | -0.89 | | -0.0772 | -1.513 | |
| deal_valueadd_flg | | | | | | | 0.0232 | 1.859 | . |
| CMS | | | | | | | 0.0371 | 0.192 | |
| target_Ind_Grp | | | | | | | | YES | |
| DF | | 573 | | | 330 | | | 227 | |
| Adjusted $R^2$ | | 0.0328 | | | 0.04723 | | | 0.0238 | |

that rivals will the next acquisition targets go up after the deal completion dates, because the deal completion signals an increased probability that the future rival deals will also be completed successfully upon taken over. The probability that rivals will be the next acquisition targets go up after the deal withdrawn dates, because the rivals are the natural replacements to the targets with indistinguishable firm characterstics and ex-ante performance differences. These predictions can be shown by relating the rival announcement-period CARs to the rival effective-period CARs and the rival withdrawn-period CARs, respectively. If a positive and significant relationship exists beween rival announcement-period CARs and rival CARs in the effective-period and withdrawn-period, respectively, after controlling the relevant variables, then the evidence is consistent with the acquisition probability hypothesis.

Table 2.8 presents the stepwise OLS estimates for the regressions of rival announcement CARs on rival effective-period CARs (i.e., model (1), (2), (3)) and the regressions of rival announcement CARs on rival withdrawn-period CARs (i.e., model (4), (5), (6)). The model specifications are as below:

$$y = X_1\beta_1 + X_2\beta_2 + \epsilon$$

where $y$ is the rival announcement-period CARs, $X_1$ is either the rival effective-period CARs or the rival withdrawn-period CARs, and $X_2$ is a list of control variables representing various aspects of deal and firm characteristics.

As predicted, Table 2.8 shows that both rival effective-period CARs and rival withdrawn CARs are positively and significantly related to the rival announcement-period CARs, even after controlling for the relevant control variables. This result is consistent with the prediction of acquisition probability hypothesis.

Table 2.7 and Table 2.8, presenting the results of the announcement-period analysis on rivals, show that the rival announcement-period CARs are positively associated with target announcement-period CARs, rival effective-period CARs, and rival withdrawn-period CARs. These results are all consistent with the predictions of the acquisition probability hypothesis. However, the results thus far provide only indirect evidence for the acquisition probability hypothesis. To confirm the hypothesis, more direct tests are required.

Table 2.8: Regressions of rival announcement-window CARs on rival effective-day window CARs and rival withdrawn-day window CARs

| OLS Estimates | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variables | Estimate | t value | Estimate | t value | Estimate | t value | Estimate | t value | Estimate | t value | Estimate | t value |
| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
| (Intercept) | -0.0002 | -0.037 | 0.0647 | 1.417 | 0.0585 | 0.856 | 0.0004 | 0.036 | -0.0267 | -0.309 | 0.0190 | 0.13 |
| rival effective CARs | 0.3043 | 3.294 ** | 0.3290 | 3.422 *** | 0.4181 | 3.728 *** | | | | | | |
| rival withdrawn CARs | | | | | | | 0.8844 | 2.566 * | 1.1510 | 3.227 ** | 0.8811 | 2.048 . |
| Deal attitude | | | -0.0529 | -1.393 | -0.0678 | -1.442 | | | 0.0003 | 0.012 | -0.0194 | -0.59 |
| HiTech-Industry flag | | | -0.0139 | -1.315 | -0.0122 | -0.875 | | | 0.0552 | 1.979 . | 0.0221 | 0.504 |
| Tender-offer flag | | | 0.0122 | 0.869 | 0.0239 | 1.339 | | | -0.0037 | -0.058 | -0.0047 | -0.067 |
| MktCap_rival | | | 0.0000 | 0.988 | 0.0000 | 1.227 | | | 0.0000 | -0.201 | 0.0000 | -0.215 |
| M2B_rival | | | 0.0303 | 2.955 ** | 0.0356 | 3.177 ** | | | -0.0144 | -0.288 | -0.0028 | -0.041 |
| Tobin_Q_rival | | | -0.0268 | -2.732 ** | -0.0333 | -3.104 ** | | | -0.0181 | -0.351 | -0.0001 | -0.001 |
| ROA_rival | | | -0.0359 | -0.937 | -0.0610 | -1.413 | | | 0.0354 | 0.315 | 0.0642 | 0.438 |
| FCF_rival | | | 0.0000 | -0.857 | 0.0000 | -1.06 | | | 0.0000 | 0.178 | 0.0001 | 0.262 |
| Altmans_Zscore_rival | | | 0.0041 | 1.496 | 0.0055 | 1.818 . | | | 0.0005 | 0.081 | 0.0041 | 0.526 |
| D2A_rival | | | 0.0103 | 0.371 | -0.0043 | -0.136 | | | -0.0075 | -0.105 | -0.0251 | -0.276 |
| deal_valueadd flag | | | | | 0.0188 | 1.785 . | | | | | -0.0007 | -0.02 |
| CMS | | | | | -0.0618 | -0.49 | | | | | -2.0790 | -0.649 |
| target_Ind_Grp | | | | | | YES | | | | | | YES |
| DF | 488 | | 468 | | 370 | | 54 | | 42 | | 24 | |
| Adjusted $R^2$ | 0.0198 | | 0.0375 | | 0.0772 | | 0.0922 | | 0.1793 | | 0.124 | |

### 2.4.3 Acquisition Probability Hypothesis

If the acquisition probability hypothesis holds, then the announcement-period rival abnormal returns should reflect the actual acquisition experience of rivals. In this section I examine whether the stock market can correctly assess which rivals will become targets in the subsequent takeovers. Following Song and Walkling [2000], I partition rivals into three different groups. That is, rivals that are never acquired in the subsequent three years after the initial takeover announcements of their matching industry targets (i.e., Nontargets within three years), rivals that are targeted within one year after the initial takeover announcements of their matching industry targets (i.e., Targets within one year), and rivals that are targeted within two to three years after the initial takeover announcements of their matching industry targets (i.e., Targets within two to three years). Among these three groups of rivals, I compare the means and medians of their announcement-period abnormal returns and test the hypothesis that their means are different from zero. Table 2.9 presents the results.

Table 2.9 shows that out of 575 pairs of targets and rivals in the analysis sample, 39 of the rivals (or 6.78% of the total) become targets of acquisition attempts within one year and 104 of the rivals (or 18.09% of the total) become targets of acquisition attempts within two to three years, subsequent to the initial industry announcements. Also, the announcement-period abnormal returns of rivals targeted within one year has highest mean abnormal returns over the announcement period, relative to the other two groups of rivals. The results of Student t test also show that rivals targeted within one year have mean abnormal returns significantly different from zero, while the other two groups of rivals have mean abnormal returns indistinguishable from zero, as shown by the t statistics in the bracket parentheses. Moreover, using the two-sample assuming equal variance test, I compare the announcement-period abnormal returns between rivals targeted within one year and that of the non-targets, the results confirm that rivals that are targeted within one year tend to have mean abnormal returns significantly different from that of the non-targets, providing supportive evidence that the market tend to assign higher valuations to the rivals that are subsequently targeted within one year. This result is consistent with the hypothesis that announcement returns will be higher for those rivals that subsequently become targets.

Another important implication of the acquisition probability hypothesis is that the cross-sectional

Table 2.9: Announcement period abnormal returns to rivals categorized by acquisition activity in the three years following the initial takeover proposal announcement

Rivals are defined as the most comparable firm by BM and size in the same Fama-French 48 industry sector as a takeover target. The abnormal return for each firm is defined as the residual from a market model. Abnormal returns are cumulated over the seven-day announcement period (-3, 3), where 0 is the announcement date of the initial takeover proposal announcement. T-statistics for differences from zero are shown in the bracket parentheses. Statistics for two-sample assuming equal variance tests across categories are shown in the lower part of the table.

| Abnormal announcement periods returns (-3, 3) | | | |
|---|---|---|---|
| Rivals that were subsequently: | Mean | n | Median |
| Nontargets within three years | 0.0020<br>[ 0.4608 ] | 432 | 0.0014 |
| Targets within one year | 0.0286 *<br>[ 1.9814 ] | 39 | 0.0132 |
| Targets within two to three years | (0.0106)<br>[ 0.8840 ] | 104 | (0.0053) |
| | | 575 | |

Tests for differences in means and medians between:

| | t-statistics | p-value<br>Kruskal - Wallis |
|---|---|---|
| Targets within one year and nontargets | 1.7958 * | 0.0732 * |
| Targets within two to three years and nontargets | 1.1978 | 0.2315 |

*** denotes significance at 1% level
** denotes significance at 5% level
* denotes significance at 10% level

returns of rivals over the announcement window is systematically related to the probability of acquisition. To test this hypothesis I first run a binary probit model to calculate the predicted probability of each rival in the sample. The results so far suggest that the rival announcement-period abnormal returns and the enterprise abnormal returns of the merging bidders and targets (CWE returns) over the announcement window are good predictors of whether the rivals will become subsequent targets. Hence, I create a binary probit model regressing a binary variable, indicating whether the rivals are targeted within one year or within the second year, on the rival announcement-period abnormal returns, the enterprise abnormal reutrns of the merging bidders and targets (CWE returns), and a host of other control variables. The results of the stepwise binary probit model are presented in Table 2.10.

Among the four models in Table 2.10, model (3) shows that by including the rival announcement-period abnormal returns and the CWE returns as exogeneous variables generate 28.85% McFadden $R^2$. Model (4) includes additional control variables in the regression, but not only none of the additinoal control variables appear statistically significant, also the McFadden $R^2$ by including all the additional variables only go up marginally from 28.85% to 31.83%. Therefore, I use model (3) as the final model to calculate the predicted probability that rivals will become subsequent targets, based on rival announcement-period abnormal returns and CWE returns. The specification of the binary probit model as in model (3) is as below:

$$Pr(\ Y = 1 \mid X\ ) = \Phi(X'\beta)$$

where Y is an indicator variable for whether a rival is targeted within one year after the initial announcement. If a rival is targeted within one year after the initial announcement, then $Y = 1$, or else if a rival is targeted within two or three years after the initial announcement, then $Y = 0$. The explanatory variables, $X$, are $CAR_{rival\ AD}$, $CAR_{CWE}$, and other control variables on deal and firm characteristics.

The result of model (3) shows that both rival announcement-period abnormal returns and the CWE returns are positively associated with the probability of rivals becoming subsequent targets. This result also concurs with the previous findings indicating that the rival announcement-period abnormal returns and the CWE returns are positively associated with rivals becoming targets in the

near future. Using the predicted probability from model (3), I examine the hypothesis that the cross-sectional returns of rival firms over the deal announcement window is systematically related to the probability of acquisition.

One direct test of the acquisition probability hypothesis is that the rival announcement-period abnormal returns are positively associated with the probability of the rivals becoming targets in the near future. Table 2.11 presents the stepwise OLS estimates from regressing the rival announcement-period abnormal returns on the predicted probability of rivals becoming targets within one year of the initial announcements. The specification of the model is as below:

$$y = X_1\beta_1 + X_2\beta_2 + \epsilon$$

where $y$ is the rival announcement-period CARs, $X_1$ is the predicted probability that rivals are targeted within one year after the initial announcements, estimated from the previous binary probit model, and $X_2$ are a list of control variables representing various aspects of deal and firm characteristics.

As predicted, the OLS estimates show that the predicted probability variable is positively associated with the rival announcement-period abnormal returns, and it stays statistically significant at 1% level even after including other control variables, as shown by model (2) and (3). This result in combination with the previous findings of this paper provide strong support to the hypothesis that the source of value creation for industry rivals around the takeover proposal announcements is due to higher probability that the rivals will become subsequent targets.

## 2.5 Summary and Conclusions

Previous studies analyzing the spillover effects of takeover announcements on industry rivals propose several conjectures in explaining the source of value creation to rivals over the announcement period. The most popular explanation is that takeover activities are driven by the productive efficiency motives, and therefore, industry rivals who share similar technologies as the target firms are likely to benefit from the extent of the efficiency gains arising from the takeovers. As a result, rivals experience positive abnormal returns during the announcement window. An alternative hypothesis proposed by Song and

Table 2.10: Probit regressions estimating the probability of rivals becoming the subsequent targets

Binary probit estimates

| | Estimate | z value | | Estimate | z value | | Estimate | z value | | Estimate | z value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | | | (2) | | | (3) | | | (4) | | |
| (Intercept) | -0.1807 | -1.347 | | -0.3796 | -2.531 | * | -0.4026 | -2.551 | * | 0.8310 | 0.919 | |
| Rival CARs | 7.4099 | 2.346 | * | | | | 11.5 | 2.809 | ** | 12.9667 | 2.915 | ** |
| CWE_ret | | | | 2.3891 | 1.778 | . | 3.0814 | 2.135 | * | 3.0884 | 1.913 | . |
| Deal attitude | | | | | | | | | | -0.8623 | -1.355 | |
| HiTech-Industry flag | | | | | | | | | | -0.1265 | -0.279 | |
| MktCap_rival | | | | | | | | | | -0.0003 | -0.974 | |
| M2B_rival | | | | | | | | | | -0.0788 | -0.441 | |
| D2A_rival | | | | | | | | | | -0.4419 | -0.427 | |
| DF | | 90 | | | 76 | | | 75 | | | 70 | |
| McFadden $R^2$ | | 0.0475 | | | 0.2074 | | | 0.2885 | | | 0.3183 | |

Table 2.11: OLS regressions relating the rival announcement-period abnormal returns to the predicted probability of rivals becoming subsequent targets

OLS estimates

| | Estimate | t value | | Estimate | t value | | Estimate | t value | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | | | (2) | | | (3) | | |
| (Intercept) | -0.0708 | -7.2400 | *** | -0.1075 | -2.3990 | * | -0.1040 | -1.8420 | . |
| Predicted probability | 0.1954 | 8.5480 | *** | 0.2183 | 8.1360 | *** | 0.2163 | 7.5120 | *** |
| Deal attitude | | | | -0.0376 | -1.5570 | | -0.0387 | -1.5910 | |
| Payment | | | | 0.0086 | 0.7440 | | 0.0104 | 0.8540 | |
| HiTech-Industry flag | | | | 0.0147 | 1.0830 | | 0.0125 | 0.8270 | |
| Tender-offer flag | | | | 0.0261 | 1.5390 | | 0.0263 | 1.5310 | |
| MktCap_rival | | | | 0.0001 | 0.5170 | | 0.0001 | 0.5320 | |
| M2B_rival | | | | -0.0168 | -0.6970 | | -0.0190 | -0.7320 | |
| Tobin_Q_rival | | | | 0.0191 | 0.7700 | | 0.0212 | 0.7970 | |
| ROA_rival | | | | -81.9700 | -1.1320 | | -84.4700 | -1.1570 | |
| d2e_rival | | | | 0.0005 | 1.3140 | | 0.0005 | 1.2980 | |
| FCF_rival | | | | 0.0000 | -0.6170 | | 0.0000 | -0.5970 | |
| AT_ret_rival | | | | 0.0345 | 2.1250 | * | 0.0349 | 2.1250 | * |
| Profitability_rival | | | | 81.9900 | 1.1320 | | 84.4900 | 1.1580 | |
| sale_growth_rival | | | | -0.0060 | -0.3440 | | -0.0061 | -0.3520 | |
| MVA_rival | | | | 0.0000 | 0.7070 | | 0.0000 | 0.6970 | |
| meq_rival | | | | -0.0001 | -0.5120 | | -0.0001 | -0.5280 | |
| Altmans_Zscore_rival | | | | -0.0011 | -0.3860 | | -0.0011 | -0.3900 | |
| PE_ratio_rival | | | | -0.0002 | -1.7400 | . | -0.0002 | -1.6690 | . |
| D2A_rival | | | | -0.0753 | -1.9020 | . | -0.0755 | -1.8960 | . |
| deal_valueadd_flg | | | | | | | 0.0017 | 0.1530 | |
| CMS | | | | | | | 0.0856 | 0.5380 | |
| target_Ind_Grp | | | | | | | | YES | |
| DF | | 452 | | | 250 | | | 247 | |
| Adjusted $R^2$ | | 0.1373 | | | 0.2316 | | | 0.2235 | |

Walkling [2000] suggests that the positive abnormal returns to rivals over the announcement period is due to the fact that rivals will become subsequent targets themselves, as known as the acquisition probability hypothesis. Song and Walkling [2000], using an analysis sample based on horizontal and non-horizontal takeovers from 1982 to 1991, find evidence supportive of the acquisition probability hypothesis. They identify rivals as all the firms located in the same Value Line industry as the target firm. Hence, each target firm in the analysis sample could be associated with multiple industry rivals.

This paper uses a more recent data set, based on horizontal mergers from 1993 to 2012, to test the expanded version of acquisition probability hypothesis. Unlike Song and Walkling [2000], this paper defines rivals as the most comparable firm within the same Fama-French 48 industry sector, whereas the comparability is determined by matching size and the market-to-book ratios. This procedure generates 575 pairs of targets and matching rivals that met the matching criteria. Unlike the previous studies, this paper didn't find positive announcement-period abnormal returns to rival firms based on the analysis sample. However, a subsample of rival firms associated with deals of positive combined wealth effect (CWE), or value-creating deals, show evidence of positive and significant rival abnormal returns during the announcement period. This result is consistent with both the productive efficiency hypothesis and the acquisition probability hypothesis. Moreover, OLS analysis shows that higher rival announcement-period CARs are associated with higher target announcement-period CARs, higher rival effective-period CARs, and higher rival withdrawn-period CARs, even after including the relevant control variables on deal and firm characteristics. These results support the acquisition probability hypothesis indicating that rivals earn positive abnormal returns because of the increased probability that they will be targets themselves.

More direct tests of the acquisition probability hypothesis confirm that rivals that are subsequently targeted within one year after the initial announcements experience higher announcement-period abnormal returns, relative to rivals that are not targeted or rivals that are targeted within two- or three-years after the initial announcements. Finally, the stepwise OLS estimates from regressing rival announcement-period abnormal returns on the predicted probability from a binary probit model show that the predicted probability variable is positively and significantly associated with the rival announcement-period CARs. This result provides the last piece of affirmative evidence required to

corroborate the acquisition probability hypothesis.

# CHAPTER 3

# IMPACT OF SHAREHOLDER ACTIVISM ON EXISTING BONDHOLDER WEALTH: EVIDENCE FROM CALPERS

## 3.1 Introduction

It is well known that the portfolios of pension funds are heavily indexed and largely externally managed. As a result, pension funds don't generally trade on short-term information, even when the companies to which they have exposure become financially distressed. To strengthen the long-term outlook of the equity portfolio, several prominent pension funds have adopted an activist approach of targeting firms with inferior stock performance and poor governance practices. They have applied this strategy through both public and private channels. The California Public Employees Retirement Fund (CalPERS) is widely seen as the leader in the field of pension fund shareholder activism.

Since 1987, CalPERS has applied a focus-list approach to target companies with inferior stock performance. The Focus List, as a significant component of CalPERS' corporate engagement program, mainly relies on publicity to facilitate corporate governance change. Every year, CalPERS sifts through its equity portfolio for the worst-performing stocks, based on the buy-and-hold stock returns of the past 1, 3, and 5 years. It then releases a list of the worst-performing stocks, which is published on the newspapers and various media. Should the stock performances of the focus-list companies continue to falter, CalPERS would include the name of the company on the focus list in the following year. On several instances the same companies appear on CalPERS' focus list several years in a row[1].

[1] For example, Boise Cascade Corp (1993, 1994, 1995); IBM (1992, 1993, 1994); SYBASE Inc. (1997 and 1998); Novell Inc. (1997, 2005); Advanced Micro Devices, Inc. (1993, 1998, 2000).

The effectiveness of CalPERS' corporate engagement program in enhancing shareholder values has been widely studied. These papers mainly utilize the target companies' short-term and long-term excess stock returns and, in a few cases, the post-targeting operating performance as the evaluation metrics. The findings from these papers are, however, mixed. Smith [1996] states that CalPERS targets generate 3-year excess returns of about 11% (no statistical test), whileWahal [1996] finds that CalPERS targeting is associated with a positive and significant announcement effect of 1.0% on the letter-to-firm date. Del Guercio and Hawkins [1999] found that the proxy "proposals sponsored by CalPERS appear to have the broadest and most substantial impact on subsequent events (such as CEO turnover) at target firms." Neither Smith [1996] nor Del Guercio and Hawkins [1999] find any evidence of an announcement period effect at the time of CalPERS proxy targeting. In addition, English et al. [2004] find a positive abnormal announcement effect after controlling for contaminating events, but notes that the results of long-term abnormal returns are dependent on the methodology employed. Nelson [2006] argues that the previous papers which found evidence in favor of positive "CalPERS Effect" are subject to pre-event estimation bias. After correcting for the bias, the positive "CalPERS Effect" disappeared.

While previous studies evaluate the impact of pension fund activism on shareholder value, no study to my knowledge has examined the impact of pension fund activism on bondholder wealth. Klein and Zur [2011], through studying the impact of hedge fund activism, found significant wealth transfer from bondholders to shareholders as the result of the activism. Since hedge funds, especially long-only hedge funds, have exposure to only one component of the capital structure (equity), any negative impact on the other component of the capital structure (debt) does not result in loss for the hedge funds' holdings. Pension funds, however, maintain substantial exposure in both components of the capital structure and, therefore, are subject to loss from their bond holdings if a similar wealth expropriation effect takes place as a result of their activism. From 2002 to 2009, CalPERS has allocated, on average, 24% of its assets to domestic equity and about 23% to domestic debt. Since domestic debt is a major component of CalPERS' portfolio (nearly as large as domestic equity), any actions taken by CalPERS that benefit shareholders while potentially impacting bondholders negatively warrant attention. This issue is especially prominent, as individuals running state pension fund systems are believed to lack

proper incentives to maximize fund value (Murphy and Van Nuys [1994]).

Accordingly, this paper focuses on data from CalPERS to explore the impact on bondholders related to pension fund shareholder activism, as a way to provide a more complete picture of the overall effectiveness of CalPERS' activism. The remainder of the paper is organized as follows. Section 3.2 provides background information on CalPERS' Focus List program, and discusses the results already produced by previous research in this area. Section 3.3 details the methodology for assessing bond performance before, during, and after the Focus List announcement. Section 4 presents findings on the Focus List's effect on both stockholder and bondholder wealth. Finally, I conclude in Section 3.5.

## 3.2 Background

Fama and Jensen [1983] establishes that reputation is the most important factor that drives corporate directors. Monks and Minnow [1995] documents a shareholder activist Robert Monks, after failing miserably at his proxy fight, succeeded in initiating major changes at Sears, by exposing the identities of Sears' directors on Wall Street Journal, labeling them as "non-performing assets" of Sears. Following the mounting evidence pointing to public opinions as a powerful tool of corporate control, Zingales [2000] calls for more research concerning the effect of public opinions on corporate governance.

Relative to individuals, a fund that is heavily indexed and externally managed has more incentives to pursue activism as an investment strategy. Not surprisingly, several prominent pension funds have incorporated public targeting into their activism toolkits. Among them, the most well-known is CalPERS' annual Focus List (CFL), also known as the "Name-and-Shame List". Since the Focus Lists are released every year, the names of the target companies are publicly available. Hence, the CFL program has served as a feeder for empirical research examining the effectiveness of pension fund activism and the role of publicity at shaping corporate governance and corporate performance. To CalPERS, the use of publicity serves two purposes: (1). drive the reputation-concious directors of the underperforming firms to change; (2). use the externality associated with negative publicity to keep directors of Corporate America focusd on maximizing firm values in order to reinforce positive long-run market returns.

### 3.2.1 CalPERS Focus List (CFL) Program

Due to heavy indexing and largely external managed equity portfolios, prominent pension funds have been using shareholder activism as an investment strategy in order to enhance the long-term value of the portfolio companies. The California Public Employee Retirement System, or CalPERS, has the largest ownership stakes among the externally managed indexed funds (Del Guercio and Hawkins [1999]) and is seen as the leader in the field of shareholder activism (Nesbitt [1994], Smith [1996], Crutchley et al. [1998], Anson et al. [2003], English et al. [2004], Nelson [2006]).

The history of CalPERS' Focus List program can be traced back to 1987, when CalPERS' CEO at the time Dale Hanson initiated the program to advance CalPERS' aggressive shareholder activism campaign. The initial activism in the 1987-1990 time period was geared toward eliminating poison pills and staggering boards enacted in companies to prevent hostile takeovers in the very active corporate control market (Nesbitt [1994]). In 1990, CalPERS shifted its focus to target firms with poor stock performance[2]. Before 1992, the companies targeted by CalPERS would become public information only when a shareholder proposal was filed. Starting in 1992, however, CalPERS began to publicly announce the names of target firms. Dale Hanson, the CEO from 1986 to 1994, said "a number of companies won't move unless they have to deal with (the problem) because it's in the public eye" (Dobrzynski [1992]). After Dale Hanson's departure in 1994, CalPERS continued to focus on stock performance as the primary targeting objective, under the purview of the new CEO Richard Koppes. However, its strategy was modified to target companies with very large size (e.g., IBM) to companies with medium size (i.e., Edison Brothers Stores). Rehfeld [1997] and Crutchley et al. [1998] documented a decline in effectivness of the Focus-List targeting in the post-Hanson era (1992 - 1997), with a more prominent drop in the effectiveness after Koppes' departure in 1996. These findings indicate that the implementation of the Focus List program is dependent on the leadership at helm [3].

It's important to clarify the value-maximization goal of CalPERS' activism does not only apply to that of the target firms, CalPERS strives to utilize the Focus List to lift the stock market return. Since

[2]Bill Crist, the president of CalPERS' board, said, "Our objective is not to instill fear, but to encourage good performance" (The Washington Post, 1993)

[3]Robert Monks, a shareholder activist through Lens Corporation says, "What gave CalPERS the power was the personality of Dale Hanson" (Rehfeld [1997]).

CalPERS' portfolio are widely diverfied, sustainable gains to CalPERS' portfolio are realized only when the market is performing well. Thus, CalPERS intends to use the negative publicity associated with the Focus List as a monitoring mechnism to keep the broader market disciplined. Richard Koppes, former CEO of CalPERS, famously said, 'It makes sense for us to try to raise the ocean in order to lift our boat' (remarks at Stanford University "Directors' College", March 21, 1996).

A natural question arises as to how target firms responded to the naming-and-shaming by CalPERS. Unfortunately, the extant literature offers little guidances on this question. Anson et al. [2003] suggests that potential CFL candidates react immediately by commencing share buybacks or by implementing new internal controls in hope of boosting their share price in the short-run. A deeper undertanding is required for us to decipher whether the effect of CalPERS' activism program is short-term in nature or is long-term sustainable. In section 5.2, I found evidence suggesting the changes in CFL firms around the naming-and-shaming announcements are substantial, as revealed in accounting measures and corporate news announcements.

CalPERS' targeting process largely consists of two stages. In the first stage, CalPERS goes through a well-specified procedure to finalize the target companies for its "Focus List" program. Under this program, CalPERS screens the top 1000 public companies from its portfolio (across sectors and market capitalization) every summer to identify potential target companies. Specifically, two layers of screening metrics are employed. The first layer of screening involves evaluating buy-and-hold stock returns in the past one, three, and five years, relative to their peer companies, industry groups, and respective benchmarks. The second layer of screening focuses on key governance factors, which include, but are not limited to: board quality with an emphasis on skill-sets and diversity, board independence, board leadership, director election practices, share-owner rights, succession planning, executive compensation, risk oversight, as well as environmental and social issues. Through this process, a preliminary list of about 15 companies, which are the primary Focus List candidates, is created.

CalPERS then initiates contact with each of the preliminary-list companies to voice concerns and propose changes in the companies' governance practices. The communication procedure normally starts with a personal letter from the institution to a high-level manager of the target company, and is often followed by conversations between managements of the two parties. Companies which react

quickly to the concerns of CalPERS usually stay off the Focus List, and thereby avoid the bad publicity associated with it[4]. Companies that are not sufficiently responsive will be named in the Focus List[5]. The migration from the preliminary list to the Focus List usually takes about two to four months. The final Focus List normally includes six to tIlve companies.

In the second stage of targeting, CalPERS continues to monitor the performance of the companies on the Focus List. If performance of the targeted companies continues to falter and a settlement between the institution and the company cannot be reached, then frequently, a shareholder proposal is filed, which is included in the annual proxy statement in order to solicit shareholder votes[6]. As a result, most companies approached by CalPERS respond positively[7] (Anson et al. [2003]).

While several of the other largest and most active pension funds also publicly announced their targets before 1992, CalPERS's Focus-List program is the only program that still used publicity as an activism tool after 1992[8]. In contrast, most other pension funds[9] seek a quieter and more friendly way by initiating dialogues through private letters and telephone calls. To some extent, the use of publicity by CalPERS mobilizes external monitoring of the CFL firms by other market participants, and hence helps mitigate the risk that the engaged companies renege on the agreements made in private.

### 3.2.2 Literature Review

The five most studied questions surrounding the pension fund activism are:

- the characteristics of companies likely to become an activism target (John and Klein [1998]; Karpoff et al. [1996]; Smith [1996]; Carleton et al. [2002])
- the measures of targeting success (Del Guercio and Hawkins [1999], Gillan and Starks [2000])
- the improvement on the operating performance of the targeted companies (Karpoff et al. [1996],

[4] In 2009, for instance, CalPERS privately engaged 13 companies and only 4 companies were ultimately named in the Focus List.

[5] The former chief investment officer of CalPERS, Dale Hanson (1993) notes that institutional investor activists usually "first try to negotiate with management and submit a shareholder proposal only if management is not sufficiently responsive."

[6] Pursuant to Rule 14 a-8, all eligible shareholder proposals should be included in the proxy statement to allow voting shareholders to vote on shareholder proposals in absentia (John and Klein 1998).

[7] approximately 70% of companies

[8] CalPERS stopped the name-and-shame approach in 2010 in favor of confidential company engagement.

[9] TIAA-CREF, SWIB

Smith [1996], Wahal [1996], Woidtke [2002])

- the short-term event-window stock abnormal returns of the targeted companies (Strickland et al. [1996], Carleton et al. [2002], Gillan and Starks [2000], Chen et al. [2007])
- the long-term stock performance of the targeted companies (Nesbitt [1994], Wahal [1996], Del Guercio and Hawkins [1999], English et al. [2004], Chen et al. [2007])

All of these studies attempt to ansIr one important question: what is the impact of pension fund activism on company performance? AnsIrs to this question could help address a more critical issue: whether pension fund activism can serve as a substitute for (or supplement to) an active market for corporate control. Since takeovers and proxy contests have been found to be expensive and contentious means to reign in corporate problems, much effort has been spent on finding an alternative.

Several early papers advocate investor activism as a low-cost alternative to the traditional means of external corporate control (takeovers and proxy contests). Pound [1993] and Black [1992] argue that, because of the dying-down of the 1980s hostile takeover market, investor activism now serves to evolve the market- and transaction-based systems of corporate governance into a political model of corporate governance. Pound [1993] suggests that the investor activism as a political model of corporate governance is preferable to the takeover model due to its flexibility in addressing specific corporate problems. Jensen [1993] maintains that active investors have the financial interest and independence to view firm management and policies in an unbiased way, and have the incentives to buck the system and correct (reign in) problems earlier rather than later. The increased interest in shareholder activism has spawned a number of empirical studies examining the efficacy of activism by public and private pension funds. The majority of this research (Karpoff et al. [1996], Wahal [1996], Strickland et al. [1996], Del Guercio and Hawkins [1999], Carleton et al. [2002], Gillan and Starks [2000], Woidtke [2002]) focuses on evaluating the wealth effect of pension-fund activism during the shareholder proposal submission periods. A few studies (Nesbitt [1994], Smith [1996], Wu [2004], Nelson [2006], Barber [2007]) also look at the wealth effect around the announcement of CalPERS' Focus List. All of these studies focus on examining how pension fund activism impacts shareholder wealth; accordingly, abnormal stock returns (short-term and long-term) and operating performance measures are used as the evaluation metrics. The findings from this line of research are mixed.

A number of studies found evidence supportive of investor activism as a means to corporate control. Smith [1996], using CalPERS' letters to management, found a significant positive stock price reaction for successful targeting events and a significant negative reaction for unsuccessful events. Del Guercio and Hawkins [1999] studied shareholder proposals of the largest, most active funds[10] from 1987 to 1993, and found that activist funds have been successful in achieving stated goals at target firms. Carleton et al. [2002], in a study of the 45 firms targeted by TIAA-CREF from 1992 to 1996, found that TIAA-CREF was able to secure compliance from 97.7% of the firms it targeted. Wu [2004] finds evidence that companies publicly targeted by CalPERS decreased the number of inside directors and increased the likelihood of CEO dismissal; the relationship between performance and CEO dismissal becomes stronger after companies are named on the Focus List.

Many studies questioned the effectiveness of institutional activism. Karpoff et al. [1996], studying abnormal stock returns and operating performance around the announcements of shareholder proposals, found no unusual improvement in the target firms' firm values or operating performance. Wagster and Prevost [1996] report significant wealth losses for firms on CalPERS target list around announcements of SEC proxy reforms easing shareholder communications. Wahal [1996], who examined the firms targeted by the nine most active funds from 1987 to 1993[11], found no evidence of significant long-term improvement in either stock price or accounting measures of performance in the post-targeting period, casting doubt on the effectiveness of pension fund activism as a substitute for an active market for corporate control. Del Guercio and Hawkins [1999] also found no statistically discernible results pointing toward value-creation through examining short-term and long-term stock returns, and operating performance. Gillan and Starks [2000] found that the success of activism is conditional on whether the activism is coordinated, with slightly more success in the activism of coordinated groups.

A number of studies concentrate their analysis on CalPERS. Anson et al. [2003] examined firms on CalPERS' Focus List from 1992 to 2001 and found significant positive excess returns in the first 95 trading days after publication of the list, as well as positive (but not significant) excess returns in

[10] the State of Wisconsin Investment Board (SWIB), the Teachers Insurance and Annuity Association: College Retirement Equities Fund (TIAA-CREF), the California Public Employee Retirement System (CalPERS), the California State Teachers Retirement System (CalSTRS), the New York City Pension Fund System (NYC)

[11] The funds examined include CalPERS, CalSTRS, the Colorado Public Employee Retirement System (ColPERA), NYC, the Pennsylvania Public School Employee Retirement System (PSERS), SWIB, TIAA-CREF, the Florida State Board of Administration (FSBA), and the New York State Common Retirement System (NYSCR).

the subsequent 90 trading days. Additionally, they noted a greater impact on large-cap companies, companies with more Wall Street analyst coverage, and companies identified in financial media as poor performers before the Focus List publication. English et al. [2004], further exploring the "CalPERS Effect" on Focus List firms from 1992 to 1997, found positive abnormal returns over the one-day publication date window, but "limited evidence of positive abnormal returns beyond 6 months" using the Barber and Lyon [1997] approach. Interestingly, they also observed that repeated announcements of CalPERS targeting do not have a significant impact on abnormal returns, suggesting that "it has become obvious that the firm has not yielded to CalPERS pressure." Nelson [2006] performed a comprehensive analysis of the Focus List firms from 1990 to 2003. Although he did find significant cumulative abnormal returns in the early 1990-1993 group of firms, he did not find significant cumulative abnormal returns over short term publication date windows after 1993, directly contradicting the previous papers' suggestion of a "CalPERS Effect" in that later time period. His analysis used both market model parameters estimated over a pre-event time window (as with the previous papers) and market model parameters estimated over a post-event time window (unlike the previous papers). He observed significant negative bias in the pre-event market model alphas (since CalPERS Focus List firms generally perform poorly prior to being placed on the list), which would produce a corresponding positive bias when computing CARs. Based on this result, he determined that the previous papers' analyses exhibited this pre-event estimation bias, which helped to produce their positive "CalPERS Effect" results. When using post-event estimation to correct that bias, he found no evidence of a positive "CalPERS Effect" in the 1993-2003 group.

While it's important to understand how pension fund activism could impact the target companies, as addressed by the extant research, I believe that it's also critically important to assess the value effect of activism for the pension funds which initiate the activism. The former analyzes the potential "benefit" and the latter examines the potential "cost." Only when the potential benefits outIigh the potential cost should pension funds undertake activism designed to enhance the long-term value of their portfolios. So far, I are not aware of any studies that present the financial insight through the "cost" angle. In addition, no study of which I are aware has evaluated the impact of activism on the value of bondholder wealth. Since pension funds, especially public pensions, allocate a significant percentage of

assets in the bond portfolio (nearly as much as the stock portfolio), any actions undertaken by pension funds should factor in the aggregate impact on the combined stock and bond portfolio. Otherwise, the total impact on the fund is not understood completely.

This study contributes to the literature in three ways. First, this is the first paper that empirically examines the wealth effects the pension fund activism has on existing bondholders of target companies. Second, this study adds to the line of research that reports the impact of pension fund activism on shareholders. Finally, this paper is the first that provides the integrated outlook for the wealth effect of pension fund activism on the fund level.

## 3.3 Data and Methodology

### 3.3.1 Description of the sample

The complete sample includes 140 companies publicly targeted by CalPERS' annual Focus List (CFL) from 1994 to 2009[12]. I obtained the Focus List press releases directly from CalPERS. On the release document each year, I find the time stamp, the companies publicly targeted, and (sometimes) the causes for targeting. I then checked on the Lexis/Nexis newswire for the day difference between the release filing dates and the report dates of the Focus List on Wall Street Journal (WSJ) each year. I found a margin of error of only one day between CalPERS' release dates and the WSJ report dates; hence, I use CalPERS' release dates as the announcement dates for this study.

A subset of 137 companies is used to evaluate the impact of the Focus List on the shareholder wealth. The daily stock return and the benchmark index return data (S&P 500, value-weighted CRSP index, and equal-weighted CRSP index) are from CRSP. Due to the infrequent-trading problem of bonds, a much smaller sample, consisting of 25 Focus List companies, is created in order to evaluate the impact of the Focus List on bondholder wealth. Table 3.1 reports descriptive statistics for the data used in the stock and bond analysis. All of the accounting related information is from COMPUSTAT.

Both TRACE and Mergent FISD provide bond prices on a daily basis. I use TRACE as the source for daily bond prices. In choosing between FISD and TRACE, I compared the bond pricing data in

[12] 2009 was the last year CalPERS publicly targeted companies through the Focus List.

these two databases and found that the bonds recorded in FISD[13] are more thinly traded and have feIr bond issues, even though it covers a longer time period[14]. I opt to use TRACE bond data, due to the better quality of bond pricing data. With this choice, the sample horizon is limited to 8 years (from 2002 to 2009). I obtain all of the coupon and rating related information from Mergent FISD.

### 3.3.2 Short-Horizon Performance Evaluation

The extant research presents two challenges in short-horizon event-study research: the substantial uncertainty concerning the actual event day (Del Guercio and Hawkins [1999]), and the methodology used to compute the short-term and long-term abnormal returns. The event date problem is especially prominent in papers that study shareholder proposals. A wide range of different action dates have been suggested, such as the proxy mailing dates, shareholder meeting date, the announcement dates of shareholder proposals appearing in the WSJ, and so on. Since I use the release dates of CalPERS' annual Focus List, results of this paper are based on clear event dates. Further, I mainly rely on plots, instead of event-study methodologies, to detect the wealth change around the announcement dates. My considerations are two-fold. First, most previous studies found statistically insignificant effects within the short-term event window. This is understandable in the case of CalPERS, as the institution initiated contact with target companies several months before the announcements of the Focus List; therefore, the stock market might have already absorbed this information to some extent before the public targeting takes place. Second, there has been a lack of consensus for an appropriate event-study methodology to evaluate the activism impact. While Anson et al. [2003] and English et al. [2004] found positive event-window abnormal stock returns in favor of a positive "CalPERS Effect," Nelson [2006] disputed their findings and found the positive results are caused by significant negative bias in the pre-event market model alphas. To overcome the two challenges in event study discussed above, I extended the window of analysis to one year before and after the Focus List announcement, and utilized plots in lieu of models to detect the stock and bond performance during this period.

[13] FISD bond price data are collected by NAICS from bonds trades of U.S. insurance companies only.
[14] Mergent FISD has recorded bond flat prices since 1994. TRACE started to report bond prices in 2002.

### 3.3.3 Long-Horizon Performance Evaluation

I use the Barber and Lyon [1997] control-firm approach to evaluate long-run stock and bond abnormal returns[15]. Barber and Lyon [1997] study different methods for calculating long-run abnormal returns (CARs vs. BHARs) and the different approaches to constructing a benchmark (reference portfolios, control firms, and the Fama-French three-factor models), and found that long-run buy-and-hold abnormal returns based on the control-firm approach yield well-specified test statistics. Specifically, they document that matching sample firms to control firms of similar size and book-to-market ratios yield well-specified test statistics in virtually all sampling situations.

Herein, I revised Barber and Lyon [1997] approach to generate control firms. By matching CFL firms to control firms of the same Fama-French 48 sub-industry groups and similar annual 'sale', I uniquely identifies one control firm for each CFL firm. A summary table comparing the characteristics of the CFL firm and the control firms is presented in Table 3.2. To verify that the control firms are appropriate matches to the CFL firms, I performed a paired t test between the characteristics of CFL firms and the control firms. The results show that while the CFL firms are comparable to the matching firms in some size measures (i.e., Total Assets, Market Capitalization, EBITDA), book-to-market ratio, and cash holdings, the CFL firms tend to be significantly less profitable as comparing to their matching firms, according to Tobin's Q, Operating Margin, and ROA. All definitions of the control variables are in 3.5.

The long-run abnormal return of a sample firm is given as the excess buy-and-hold returns ($BHAR$) over the buy-and-hold returns of the control firms. Similar to Barber and Lyon [1997], I define $size_{i,t}$ as the market cap of firm $i$ in fiscal year $t$, and measure a firm's $book - to - market_{i,t}$ ratio by the book value of common equity (Compustat data item 60) over the market value of common equity. Barber and Lyon [1997] deleted all the financial distressed firms that report a book value of common equity (CEQ) that is less than or equal to zero[16] (approximately 9.83% of the firms in COMPUSTAT universe from 1992 to 2009). I retained all the financially-distressed firms in this analysis, since the

[15] Barber and Lyon [1997]shows that the control firm approach eliminates the new listing bias, the rebalancing bias, and the skewness problem inherent in the conventional reference portfolios (or market index) approach.

[16] CEQ is shown as negative on the balance sheet if Total Asset $<$ Total Debt.

firms named on CalPERS' Focus-List can be financially distressed firms[17].

### 3.3.4 Compute daily stock abnormal return

Herein, the daily abnormal stock return is simply defined as the excess return of each stock over the benchmark index on the same day, given by

$$AR_{j,t} = SR_{j,t} - BMR_t$$

where $AR_{j,t}$ denotes the abnormal stock return of company $j$ on day $t$, $SR_{j,t}$ is the stock return of company $j$ on day $t$, and$BMR_t$ is the benchmark index return on day $t$. The stock return of company $j$ on day $t$, $SR_{j,t}$, is given by

$$SR_{j,t} = ln(SP_{j,t}/SP_{j,t-1})$$

where $SP_{j,t}$ denotes the stock price of company $j$ on day $t$.

### 3.3.5 Compute daily bond abnormal return

I utilize recommendations from Bessembinder et al. [2009] in conjunction with the Handjinicolaou and Kalay [1984] method to calculate daily bond abnormal returns.

A common problem in bond event study is the existence of stale bond prices, due to the infrequent trading of bonds. Handjinicolaou and Kalay [1984] introduce a method to handle the stale price problem and to adjust for term structure changes. This method allows us to calculate abnormal bond returns on a daily basis, in spite of the infrequent trading nature of bonds. This approach has been adopted by a number of more recent bond event studies (Dhillon and Johnson [1994]; Allen and McConnell [2002]; Maxwell and Stephens [2003]). In order to increase the power of tests in detecting abnormal returns, I also integrate a few pieces of advice from Bessembinder et al. [2009].

Bessembinder et al. [2009] studied the empirical power and specifications of test statistics based on frequently-used methods of calculating abnormal bond returns in corporate event studies, and made

[17] A further analysis shows 9 out of 122 CFL firms with COMPUSTAT matches are distressed.

several key recommendations. Based on their suggestions, I use daily versus monthly bond prices, eliminate non-institutional trades (trades $<$ \$100,000) and compute trade-weighted averages of the remaining transaction prices in order to estimate the daily bond price. In addition, I construct value-weighted firm-level bond return in lieu of bond returns from a representative bond for each company.

Daily bond prices of individual bond issues are available in both TRACE and Mergent FISD databases. The advantage of TRACE is that the bond prices are more frequently recorded, especially after it was fully implemented in February 2005 (it now covers essentially all publicly traded bonds). One downside with using TRACE data is that TRACE only started to report bond pricing data in 2002, and hence limits my horizon of analysis to 2002 and after. The major advantage of using the Mergent FISD database is that it started to report individual bond transactions in 1994, and thus would (in theory) greatly expand the size of my analysis sample. However, since FISD bond data are limited to bonds traded by U.S. insurance companies, the bond prices as recorded are associated with each bond BUY or SELL transaction, and therefore are more sparsely populated (especially between 1994 and 2002). After factoring in the pros and cons of each database, I use TRACE for daily bond prices and Mergent FISD for other bond issue specific information, such as coupon rates, coupon payment dates, and bond ratings.

To calculate daily bond abnormal returns, I first remove all the non-institutional trades from TRACE (trade size smaller than \$100,000) and then compute the trade-weighted average of all available transaction prices within the same day as the estimated daily bond price. Based on the coupon rates and coupon payment dates information from FISD, I estimate the accrued interest corresponding to each trading day when TRACE bond prices are observed. The holding period bond returns for each day with observed bond price is calculated below:

$$BR_{ijt} = ln[(P_{ijt} + AI_{ijt})/(P_{ijt-1} + AI_{ijt-1})]$$

where $P_{ijt}$ is the price of bond $j$ issued by firm $i$. The accrued interest, $AI_{ijt}$, is computed as follows:

$$AI_{ijt} = c_{ij} \times \frac{D_{ijt}}{360}$$

where $c_{ij}$ is the coupon rate for bond issue $j$ of firm $i$ and $D_{ijt}$ is the number of days between the date when last coupon payment is made and the date on which $P_{ijt}$ is observed. Note that the notation $t$ and $t-1$ refer to two consecutive trading days when bond prices are observed. If a bond(ij) is traded on the second business day, and then the fifth business day next, then $BR_{ijt}$ is the three-day holding-period return. Therefore, $BR_{ijt}$ could represent a one-day holding-period return or a multiple-day holding-period return, depending on the frequency of bond trading.

To adjust for changes in the term structure of interest rates, Handjinicolaou and Kalay [1984] used the return of an equivalent Treasury bond over the same holding period. Since most of the bond issues in my sample are investment-grade, I use Barclay investment-grade (IG) bond index as the benchmark. The abnormal bond return is calculated as below:

$$ABR_{ijt} = BR_{ijt} - BBR_t$$

where $BBR_t$ is the holding-period return on Barclays IG index over the same holding period as corporate bond (ij).

The mean-adjusted return model, as developed in Masulis (Masulis [1980], DeAngelo and Masulis [1980]) and applied in Dann (1980, 1981), is as below:

$$R_{i,t} = E(\tilde{R}_{i,t}) + \tilde{e}_{i,t}$$

where $E(\tilde{e}_{i,t}) = 0$.

Handjinicolaou and Kalay [1984] improved the mean-adjusted return model by adjusting for term structure changes. The corrected mean-adjusted return model is as follows:

$$PR_{i,t} = E(\tilde{PR}_{i,t}) + \tilde{e}_{i,t}$$

where $PR_{i,t}$ is the excess holding-period bond return over a matching Treasury bond with similar maturity and coupon interest; $E(\tilde{PR}_{i,t})$ is the mean of the comparison period excess bond return; $E(\tilde{e}_{i,t}) = 0$. This model implicitly assumes stationarity in the excess bond returns after controlling for

changes in the term structure of interest rates. I replaced the matching Treasury bond with Barclays IG index as the control measure for term structure changes, as most of the bond issues in my analysis sample are investment-grade bonds.

The mean of the daily excess bond return, based on all of the recorded bond transactions during the comparison period, denoted by $\mu_i^{cp}$ is given as below:

$$\mu_i^{cp} = \frac{1}{K-1} \times \sum^{K} \left( \frac{ABR_{i,n}}{n} \right)$$

where $ABR_{i,n}$ is the abnormal bond return over Barclays IG index over the same $n$ day holding period, and $K$ is the number of recorded transactions for bond $i$ over the comparison holding period. This equation is analogous to equation (6) of Handjinicolaou and Kalay [1984].

The standard deviation, $\sigma_i^{cp}$, of the daily excess bond return, based on all the recorded bond transactions in the comparison period, is given as below:

$$\sigma_i^{cp} = \left( \frac{1}{K-2} \left[ \sum^{K} \left( \frac{ABR_{i,n}}{\sqrt{n}} - \mu_i^{cp} \times \sqrt{n} \right)^2 \right] \right)^{\frac{1}{2}}$$

This equation is analogous to equation (7) of Handjinicolaou and Kalay [1984].

The standardized daily excess bond return for bond $i$ of company $j$ on day $t$ is, therefore, estimated by

$$U_{i,j,n} = \frac{ABR_{i,j,n} - \mu_{i,j}^{cp} \times n}{\sigma_{i,j}^{cp} \times \sqrt{n}}$$

According to Bessembinder et al. [2009], the test statistics are better specified when the value-weighted firm-level bond returns are used, in lieu of the returns of representative bonds of each company. The disadvantage of using the value-weighted firm-level bond return approach is that I wouldn't be able to create control sample with the target sample, a method employed in Klein and Zur [2009], for comparing and contrasting accounting and financial ratios after targeting[18]. For each target company,

[18] Klein and Zur [2009] choose a representative bond for each firm in their target sample, and then create a control sample of seasoned bonds by matching the target firm's bond with another bond on the Mergent FISD by Fama French 48 industry classification, initial bond ratings, bond maturity, and bond liquidity.

I then calculate the market-value-weighted firm-level daily excess bond returns of firm $j$, denoted by $V_j$, as below:

$$V_{j,t} = \sum_{i=1}^{A} \frac{BMV_{i,j,t} \times U_{i,j,t}}{BMV_j}$$

where $BMV_{i,j}$ is the market value of bond issue $i$ of company $j$ and $BMV_j$ is the market value of all the bond issues of company $j$. $A$ denotes the total number of bond issues outstanding for firm $j$ at time $t$. The market value of bond issue $i$ of firm $j$ is given by

$$BMV_{i,j,t} = \frac{TBO_{i,j}}{FV_{i,j}} \times P_{i,j,t}$$

where $TBO_{i,j}$is the total bond offering of bond $i$ of firm $j$, $FV_{i,j}$ is the par value of bond $i$ of firm $j$, and$P_{i,j,t}$ is the trade-weighted bond price of bond $i$ on day $t$.

## 3.4 Results

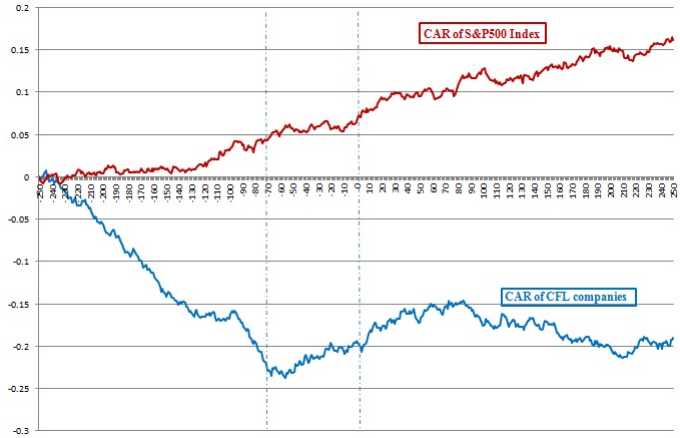
### 3.4.1 Value-effect of CalPERS' Focus List

Most previous studies of CalPERS' activism found mixed and statistically insignificant results around the announcement date (Karpoff et al. [1996], Wahal [1996], Del Guercio and Hawkins [1999], Gillan and Starks [2000], Nelson [2006]). Since the screening procedure of CalPERS' corporate engagement program is well-specified and well-known in the investment community, I suspect that a substantial amount of the announcement-day effect has been absorbed in the days before the announcement of the Focus List. Therefore, traditional event-study methodologies are unlikely to find a significant announcement-day effect. Instead, I lengthen the analysis window to cover longer periods and utilize plots to examine the stock and bond performance of the target companies. Specifically, I examine the stock performance of the publicly targeted companies in the year leading to the announcement and the year after the announcement window. Through visualizing the cumulative abnormal returns (CAR) of the CFL company stocks, relative to an appropriate benchmark index over the matching periods, I

believe the results would be more telling. The plot contrasting the CAR of CFL company stocks and the CAR of the S&P 500 index is contained in figure 3.1.

Based on the screening process for the Focus List companies, I expect the stock prices of CFL companies to underperform the benchmark. Since all the companies targeted by the Focus List are large-cap companies, I choose S&P 500 index as the benchmark for the plot. The plot below shows the stock CAR around the announcements of CalPERS Focus List (CFL), versus CAR of S&P 500 index, in the [-250 : 250] business-day window.

Figure 3.1: One-year pre-targeting and one-year post-targeting stock performance of CFL firms vs. S&P500 index (1994-2009)
Cumulative abnormal returns (CAR) for 137 firms targeted by CalPERS over the 1994-2009 period relative to the performance of S&P500 index during the matching 2-year window (one-year before the announcement of CFL and one-year after the announcement of CFL). The CAR of the 137 CFL firms is calculated based on the value-weighted CRSP index (excluding dividends).




As predicted, I see a serious price erosion on the stock prices of the CFL companies one year before the announcement date of the Focus List. This is expected, since stock performance is a major metric used in screening for Focus List companies. Around seventy business days (approximately 3 months) before the announcement of the Focus List, I see that the stock price starts to pick up and then slowly stablize in the year following the Focus List announcement. No visible price impact is indicated on the actual announcement date or in the adjacent event window. The absence of announcement-day effect in the stock price is consistent with Nelson [2006], which suggests that the announcement effect of the Focus List announcements is insignificant, after adjusting the pre-event bias.

One interesting point in this graph is the pivot point around seventy business days (approximately 3 months) before the announcement day, which is approximately the time when CalPERS initiated the contact with the preliminary-list companies[19]. It shows that companies, upon learning about their potential appearance on CalPERS' name-and-shame list, reacted swiftly to boost their short-term stock prices; resulting in a fast turnaround of the stock performance. Note that the graph is plotted based on the stock performance of the publicly targeted companies on the Focus List; therefore, it suggests quick actions taken by the publicly engaged companies to avoid being named in the Focus List. This finding conflicts with the findings of a 2011 study[20] conducted by Wilshire Associates[21] that suggests one of the reasons companies are named in the Focus List is due to their resistance to take quick actions.

In this 2011 study, Wilshire evaluated the cumulative excess returns (CAR) for the publicly engaged companies and the privately engaged companies from 1999 to 2009, and found that the stock CARs of privately engaged companies consistently outperformed the stock CARs of publicly engaged companies in the subsequent 1-year through 5-year post-targeting periods. Specifically, the stock performance of the publicly engaged companies remains negative until two years after the engagement, whereas the stock performance of the privately engaged companies sees consistent improvement from the beginning of the post-targeting period. Wilshire attributes the divergence in stock performance between privately- and publicly- engaged companies to the level of receptiveness to measures of governance reforms proposed by CalPERS. It states that "historically, only the worst offenders that were resistant to governance reform were named to the CalPERS public Focus List" and because "the privately engaged firms that are contacted are receptive to or are already engaged in some measure of reform move quickly to better governance standards, improving the performance of those stocks more rapidly."

The plot in figure 3.1 suggests an alternative explanation to that proposed by Wilshire. Specifically, the CalPERS public Focus List firms responded immediately to boost short-term stock prices as soon as they were approached by CalPERS. The reason why they were still named on the Focus List

[19] A Los Angeles Times article unveiled the names of the 15 companies on CalPERS' preliminary list on December 15, 1999, when CalPERS was in early discussions with about half of the companies on the list. The preliminary list was said to be released by mistake. The Focus List was officially released on February 22, 2000. The L.A. Times article can be accessed here: http://articles.latimes.com/1999/dec/15/business/fi-44110.

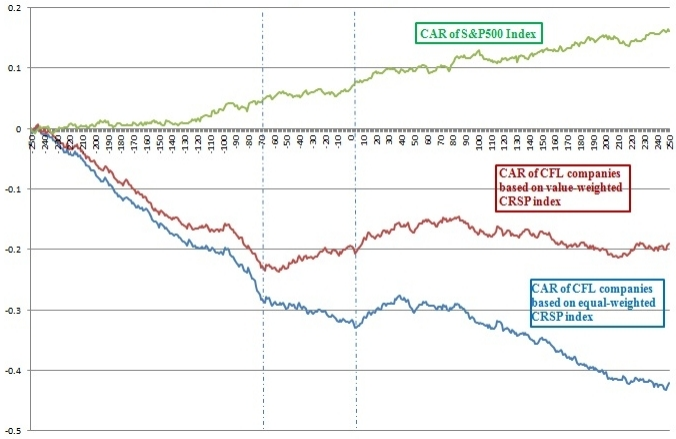
[20] http://www.calpers-governance.org/docs-sof/focuslist/2011-10-25-corp-gov-wilshire-study.pdf

[21] Wilshire Associates consults the investment committee and the board of CalPERS.

might be due to deeper financial trouble at the time of CalPERS targeting. Therefore, it's more difficult for these companies to turnaround quickly in response to CalPERS' concerns, even when the attempts were made (as can be seen in figure 3.1). If so, the conclusion drawn by Wilshire suggesting that privately-targeted companies outperform publicly-targeted companies over the long-run might be inherently biased. However, since I don't have access to the names of the companies that CalPERS privately engaged, I cannot test this hypothesis.

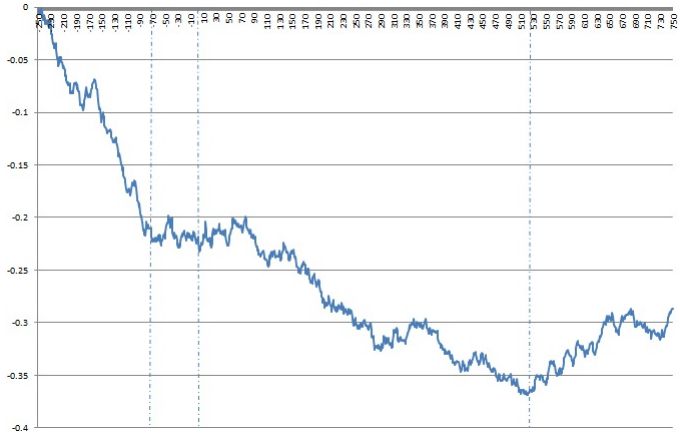
To compare and contrast the results between using the value-weighted and equal-weighted CRSP index, I plotted the stock CAR based on both benchmarks. The plot is as below.

Figure 3.2: One-year pre-targeting and one-year post-targeting stock performance of CFL firms vs. S&P500 index (1994-2009)
Cumulative abnormal returns (CAR) for 137 firms targeted by CalPERS over the 1994-2009 period relative to the performance of S&P 500 index over the matching 2-year window (one-year before the announcement of CFL and one-year after the announcement of CFL). The CAR of the 137 CFL firms is calculated based on the value-weighted CRSP index returns and equal-weighted CRSP index returns, respectively.




The CAR computed based on the equal-weighted CRSP index returns shows a turnaround of stock CAR on the announcement date of the Focus List. This might indicate the market regaining confidence in the Focus List companies, even though I still observe no sizable price impact on the actual announcement date or in the adjacent event window. The turnaround of stock CAR that take place roughly 70 business days before the Focus List announcements still exists, but to a lesser degree. The positive improvement of the stock performance that starts on the announcement date didn't persist,

Figure 3.3: One-year pre-targeting and three-year post-targeting stock BHAR of CFL firms (1992 - 2009)
Buy-and-hold abnormal return (BHAR) for 107 firms, publicly targeted by CalPERS over the 1992-2009 period, over the 4-year window (one-year before the releases of Focus List and three-years after).



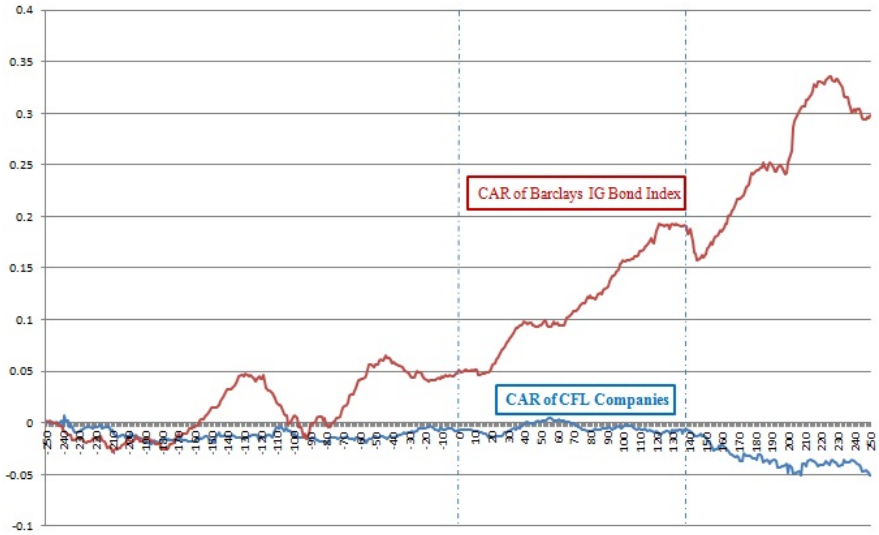

however, as I observe a downward trend after 4 months (100 business days) after the announcements.

Barber and Lyon [1997], analyzing the empirical power of test statistics in long-horizon event studies, find that the control firm approach by matching sample firms to control firms of similar sizes and book-to-market ratios yield the most well-specified results. In addition, they advocate using buy-and-hold abnormal return (BHAR) versus cumulative abnormal returns (CAR) for long-horizon studies. I figure 3.3 show the four-year (one-year before and three-year after) BHARs of CFL firms, as follows:

The pivot point at around 70 days prior to the Focus List announcements still exists (if not more prominent), indicating attempts by the target firms to avoid being named publicly. Over the three-year horizon following the announcements of the Focus List, the CFL firms perform poorly relative to their control firms with similar size (market capital) and book-to-market-equity ratios. An overview of the accounting and financial measures of the CFL firms and their matching control firms is presented in Table 3.2.

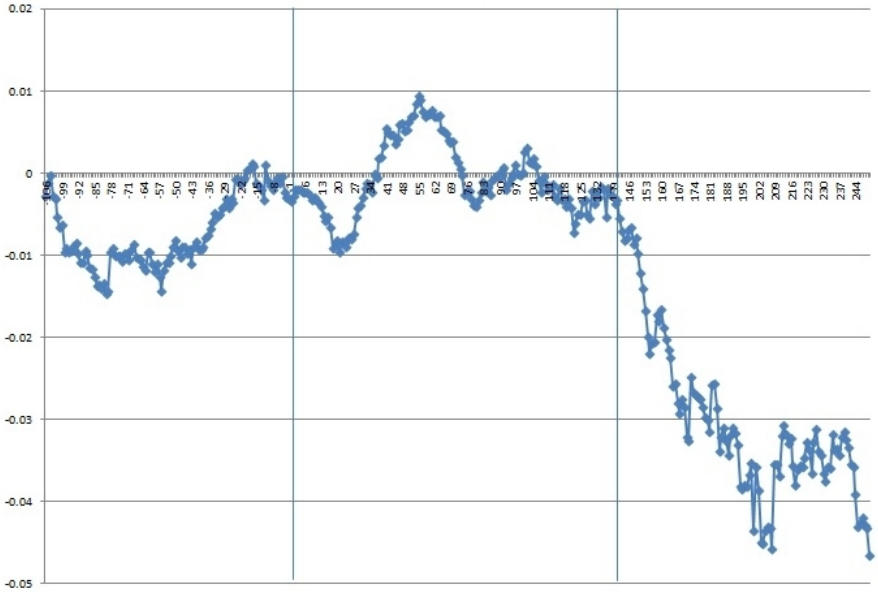
Since the goal of this paper is to evaluate the impact of CalPERS' activism on the wealth of existing bondholders, I plotted the bond performance of the CFL companies around the announcement of the Focus List within the same [-250 : 250] business-day window. The plot is presented in figure 3.4.

Figure 3.4: One-year pre-targeting and one-year post-targeting bond performance of CFL firms vs. Barclays IG bond index (2002-2009)
Cumulative abnormal returns (CAR) for the 25 companies (152 bonds) targeted by CalPERS over the 2002-2009 period relative to the performance of Barclays Investment-Grade index during the matching 2-year window (one-year before the announcement of CFL and one-year after the announcement of CFL). The bond CAR of the 25 CFL firms is calculated based on the Barclays IG bond index returns.



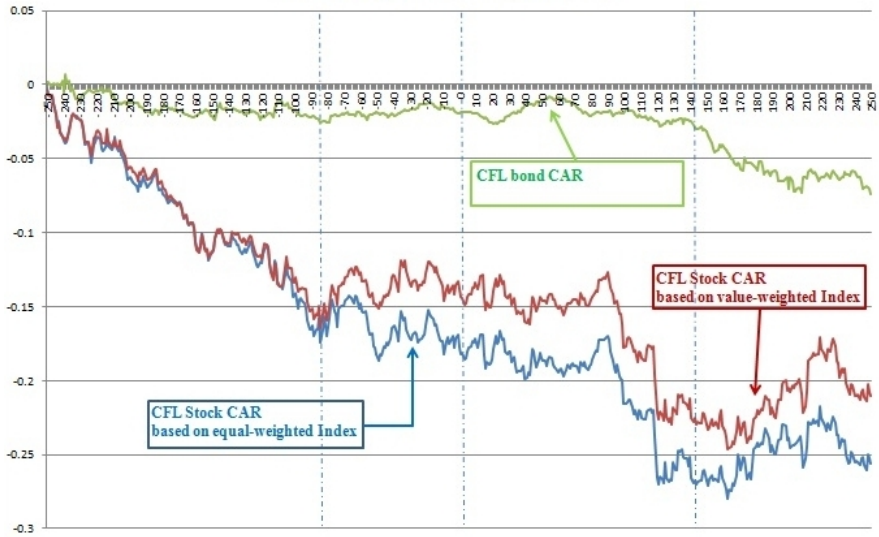

Based on this plot, while the CAR of the investment-grade bond market has been growing exponentially, the CAR of bond issues of the CFL companies has been stagnant in the one-year pre-targeting and the 140 business days (or 5-6 months after the announcement of the Focus List) post-targeting periods. After around 140 days post-CFL announcements, the bond CAR starts to go down sharply. To zero in on the bond performance of the companies targeted by the Focus List, I plot the single series of CFL bond CAR below:

Figure 3.5: One-year pre-targeting and one-year post-targeting bond performance of CFL firms Cumulative abnormal returns (CAR) for the 25 firms targeted by CalPERS from 2002 to 2009 period over the 2-year window (one-year before the announcement of CFL and one-year after the announcement of CFL). The bond CAR of the 25 CFL firms is calculated based on the Barclays IG bond index returns.




This plot indicates significant loss of target company bonds after 140 business days (approximately 6 months). Klein and Zur [2009] found that hedge fund activism decreases bondholder wealth through three major channels: (a) a reduction in cash on hand, (b) an increase in leverage as reflected through the increase in the debt to assets ratio, and (c) a credit rating downgrade. I examined all three possibilities and found a massive bond downgrade for the exisiting bonds of the Focus List companies. I report the details of credit rating analysis in Section 4.2. I didn't find any statistically significant results in either the change of cash holdings or leverage (short-term and long-term) around the announcements. Table 3.5 presents the three-year change (one-year before and one-year after) in relevant financial measures.

To show how the announcement of Focus List impact on the stocks and bonds of the same companies, I assembled a subset of 25 companies that have complete stock and bond return information over the two-year window. The plot of the stock and bond CAR for these 25 companies is reported below.




Three observations can be drawn from this plot: (1) the Focus List impacts the stock and bond CARs in the same direction; (2) the patterns of stock and bond CARs around the announcement dates are analogous to that of the full sample as shown in Figure 3.2, Figure 3.4 and 3.5; and (3) the magnitude of the stock CAR is much greater than that of the bond CAR.

### 3.4.2 Factor Analysis of Bondholder Wealth Destruction

In this section, I examine the impact of the Focus List on the ratings of the CFL company bonds. For a sample of 60 bonds with ratings one-year before and one-year after the Focus List announcement date, I found that 34 bonds (or 57%) experienced rating downgrade in the year subsequent to the announcements of the Focus List, while only one bond in the sample had its rating upgraded. The aggregate statistics (seen in Table 3.3 and Table 3.4 below) also paint a clear picture of bond rating downgrades around the Focus List announcement: the percentage of investment-grade bonds in my sample fell from 63% pre-targeting to just 40% post-targeting.

One particular firm in this sample, Delphi Corporation, exhibited a particularly noteworthy series of bond-rating downgrade in the year surrounding its Focus List announcement in April 2005. S&P rated Delphi's bonds at BB+ in December 2004, but these bonds experienced a series of downgrades in the following year, eventually reaching a D rating in October 2005[22].

[22] Delphi declared Chapter 11 bankruptcy in October 2005 (http://money.cnn.com/2005/10/08/news/fortune500/delphi_bankrupt/index.htm

Table 3.5 presents the changes in company financials one-year before and one-year after CFL targeting for both CalPERS' targets and their control sample. Column (1) contains the change in winsorized mean for the sample firms; column (2) presents change in winsorized mean for the control firms. I test for differences between the winsorized means in the fiscal year preceding the targeting year and in the fiscal year after the targeting year. The asterisks indicate whether the winsorized means in column (1) and (2) are different between the CFL sample and its control sample.

The findings in Table 3.5 are consistent with the proposition that the CFL program impacts on the structure of the target firms in ways that might be harmful to the existing bondholders. Based on the winsorized means (column (1) and (2)) for both the CFL firms and their matching control firms, the most significant result is that the total assets for the target firms fall by a mean value of $269.47 million, in sharp contrast to an increase of $2.193 billion for the control firms. The result from the paired t test shows that the differences in asset changes between the CFL firms and their matching firms are statistically different from 0 (significant at 1% level), supporting the hypothesis that the CFL firms and their matching firms tend to undergo very different asset changes around the CFL targeting. Changes in other firm-size measures are not statistically significant.

Moreover, I found that the CFL firms and their matching firms also experience very different changes in book value of common equity, total debt, and cash-to-asset ratios around the CFL targeting. In particular, the CFL firms tend to experience a significant reduction of book value of common equity and total debt, while their control firms tend to undergo a significant increase in book value of common equity and total debt. This result is somewhat expected, as a substantial reduction in total assets are likely to lead to a simultaneous reduction in book value of common equity (BE), since the computation of BE might include the book value of assets, and reduction in total debt, due to the deleveraging effect from the reduction in assets, and an increase in cash, due to asset sales.

Since the sample and control firms are comparable in size, book-to-market ratio, leverage, cash holding in the targeting years (see Table 3.2), I believe that the significant change in total assets in the fiscal year following the target year is due to the CFL targeting. The decline in the wealth of the existing bondholders of the target companies can only be attributed to the sharp decline in total

and the SEC delisted its stocks and bonds in November 2005.

assets of the target firms, as the overall collateral of the target firms fall[23] (Kaplan and Urwitz [1979], Maxwell and Rao [2003]).

Maxwell and Rao [2003], studying whether spin-offs expropriate wealth from bondholders, find evidence consistent with wealth expropriation. Specifically, their results show that the magnitude of loss to bondholders is a function of the loss in collateral in the spun-off subsidiary and the level of financial risk of the parent firm. The significant reduction in total assets is consistent with the spin-off story. To confirm that sharp reduction in total assets (or spin-off) actually occurred, I used the CapitalIQ Key Development database to examine how CFL firms reacted to the CalPERS' targeting in the remainder year subsequent to the Focus List announcements. The results are reported in Table 3.6.

Table 3.6 documents the type of corporate announcements of the CFL firms relative to their matching control firms. The first panel reports the type of corporate announcements by the CFL firms that have more than two times in quantity relative to the matching control firms. The second panel reports corporate announcements by the CFL firms that have less than two times in quantity relative to the matching control firms. Evident from the first panel, the CFL firms experienced significant more instances of executive turnovers, lawsuits, and discontinued operations[24]/downsiding as comparing to the control firms. The 49 instances of discontinued operations/downsiding confirmed the sources of sharp decline in total assets. Furthermore, the 27 instances of dismissal announcements of top executives (CEOs/CFOs) are consistent with Wu [2004] that report companies named publicly by CalPERS are more likely to decrease the number of inside directors and increase the likelihood of CEO dismissal. It's also interesting to observe that the CFL firms, in spite of deteriorating performances, are more than twice likely to increase the amount of dividends paid out. This further confirms that the CFL firms are reacting to pressures from CalPERS in boosting returns for shareholders.

In summary, the results from examining financial ratios and corporate announcements support the story that the loss in collateral (discontinued operations / downsizings) and increase of financial risk (lawsuits, SEC inquiries, executive turnovers) in the target companies, are the sources of wealth

[23] Reduction in overall collateral results in bond rating downgrade, which translates into decline in bond returns.

[24] OfficeMax Inc. to Close 110 Retail Stores; International Paper Co. to Shut Down Its Plant on the South Shore of Montreal in July; La-Z-Boy Inc. Closes Plant in Tremont; Royal Dutch Petroleum Co. would be closing down one of its refineries in California; Iyerhaeuser Co. Announces Plans to Close Pulp and Paper Mill in Prince Albert, Saskatchewan, Canada.

transfer from the bondholders to the stockholders after the CFL targeting.

## 3.5 Conclusion

I examine the impact of CalPERS' Focus List on stockholder and bondholder wealth for companies targeted between 1994 and 2009. The results suggest that, on average, bondholders in my sample suffer moderate loss in the one-year after the announcement of the Focus List period. Based on a sample of 60 matched bonds with credit ratings, 57% of target firm bonds experienced at least one credit rating downgrade by a U.S. credit agency (S&P, Moody, or Fitch) within one year of the Focus List announcement. I also analyzed the source(s) underlying bond rating downgrade. Through comparing the changes in total assets, the level of cash holding, and leverage (both short-term and long-term) between sample and control firms around the Focus List announcement, I find that sample firms underwent sharp decline in total assets, whereas the control firms experienced significant increase in total assets (both changes are statistically significant at 1% level).

Moreover, the results suggest that the CFL firms' bondholders suffer from sharp reduction in total assets mainly due to a sharp reduction in overall collateral[25]. This finding is consistent with Maxwell and Rao [2003] that find spin-offs expropriate wealth from bondholders, mainly due to the loss of collateral and increase in financial risks. Furthermore, through surveying the news headlines in CapitalIQ Key Development database, I find supportive evidence that the loss in collateral assets and increase in financial risks of the CFL firms are the likely sources of wealth transfer from bondholders to stockholders.

Note that the sources of wealth transfer from the bondholders to the shareholders as the result of the CFL targeting defer from that in a typical hedge-fund activism (Klein and Zur [2009]). The former is likely to be caused by decline in total assets, as shown in this paper, while the latter is mainly led by an increase in long-term leverage and a decline in cash on hand, as shown by Klein and Zur [2009]. While wealth transfer from bondholders to stockholders might not carry any detrimental wealth effect to hedge fund activists, as they are likely to be exposed to only one side of the capital

[25] Recall that in the Black-Scholes framework, a firm's equity is like a call option on the firms' asset. When companies are financially distressed, reductions in companies' assets results in loss of existing bondholders.

structure, namely, corporate equities, this weallth transfer is likely to incur negative wealth effect to pension fund activists such as CalPERS, as large pension funds are likely to be universal investors that have widely diversified exposures to both sides of the capital structure, namely, corporate equity and corporate debt. Therefore, the results of this paper warrant attention, especially to pension fund activists who may advocate asset sales as a way to boost stock performance.

In overall, this paper shows resulta consistent with a negative value impact on the wealth of bondholders associated with CalPERS Focus List program. This study is the first to examine the impact of pension fund activism on bondholder wealth and thus it provides some fresh insights into the overall impact of pension fund activism. Policy makers and pension fund activists alike may find useful evidence from this paper to helpful gauge the design of pension-fund activism in the future.

Table 3.1: Descriptive statistics

This table reports descriptive statistics for the CalPERS Focus List companies. The stock returns and the value-weighted market index, used to calculate stock cumulative abnormal returns (CAR), are from CRSP. The daily corporate bond pricing data and the investment-grade corporate bond index data, used to calculate bond cumulative abnormal returns (CAR), is obtained from TRACE and Barclays Capital, respectively.

| Year | Number of Focus List Companies | Number of Companies w/ Stock CAR in the [-250:250] Business-Day Window | Number of Companies w/ Bond CAR in the [-250:250] Business-Day Window |
|---|---|---|---|
| 1992 | 10 | 8 | N/A |
| 1993 | 12 | 12 | N/A |
| 1994 | 10 | 9 | N/A |
| 1995 | 9 | 9 | N/A |
| 1996 | 10 | 10 | N/A |
| 1997 | 10 | 10 | N/A |
| 1998 | 9 | 9 | N/A |
| 1999 | 9 | 9 | N/A |
| 2000 | 10 | 10 | N/A |
| 2001 | 5 | 5 | N/A |
| 2002 | 5 | 5 | 0 |
| 2003 | 6 | 6 | 0 |
| 2004 | 4 | 4 | 2 |
| 2005 | 5 | 5 | 5 |
| 2006 | 6 | 6 | 4 |
| 2007 | 11 | 11 | 9 |
| 2008 | 5 | 5 | 2 |
| 2009 | 4 | 4 | 3 |
| **Total** | **140** | **137** | **25** |

Table 3.2: Characteristics of CFL Firms and Control Firm Samples

This table summarizes the characteristics of CalPERS' Focus List firms, the control sample, and the entire COMPUSTAT population in the year when the Focus-List firms were released. For each variable the mean and median are reported. Two-sample t test is used to compare the means of the CFL firms and their matching firms. Null hypothesis: true difference in means is equal to 0. *** represents significance at 0.01 level.

| | Mean | | | Median | | |
|---|---|---|---|---|---|---|
| | CFL | Match | COMPUSTAT | CFL | Match | COMPUSTAT |
| **Size** | | | | | | |
| Total Assets | 36,036.46 | 37,055.71 | 3,068.53 | 6,453.63 | 4,786.54 | 54.74 |
| Market Cap | 13,750.17 | 12,518.31 | 2,194.95 | 3,431.00 | 4,291.88 | 87.88 |
| SALE | 17,340.96 | 13,233.06 * | 1,904.80 | 9,689.06 | 6,018.10 | 42.13 |
| EBITDA | 1,880.10 | 1,249.79 | 251.06 | 469.80 | 544.90 | 2.86 |
| **Firm Valuation & Profitability** | | | | | | |
| Tobin's Q | 1.40 | 1.83 ** | 3.81 | 1.24 | 1.32 | 1.86 |
| Operating Margin | 0.10 | 0.13 ** | (14.59) | 0.10 | 0.10 | 0.07 |
| Book-to-Market | 0.63 | -1.98 | 0.34 | 0.57 | 0.47 | 0.35 |
| ROA | 0.10 | 0.13 *** | (0.20) | 0.11 | 0.13 | 0.07 |
| **Leverage** | | | | | | |
| ST Debt-to-Assets | 0.05 | 0.09 * | 0.11 | 0.03 | 0.05 | 0.01 |
| LT Debt-to-Assets | 0.21 | 0.18 | 0.15 | 0.22 | 0.14 ** | 0.02 |
| Total Debt-to-Assets | 0.27 | 0.27 | 0.26 | 0.30 | 0.23 | 0.08 |
| **Cash on Hand** | | | | | | |
| Cash-to-Assets | 0.06 | 0.06 | 0.19 | 0.05 | 0.03 | 0.11 |
| (Cash+Investment)-to-Assets | 0.09 | 0.10 | 0.28 | 0.07 | 0.07 | 0.20 |

Table 3.3: Bond ratings before and after targeting

| **Rating (S&P / Moody's / Fitch)** | **Pre-targeting Rating** | **Post-targeting Rating** |
|---|---|---|
| **Panel A** | | |
| | **Investment Grade (IG)** | |
| AAA/Aaa/AAA | 0 | 0 |
| AA+/Aa1/AA+ | 4 | 0 |
| AA/Aa2/AA | 8 | 12 |
| AA-/Aa3/AA- | 0 | 0 |
| A+/A1/A+ | 11 | 11 |
| A/A2/A | 0 | 0 |
| A-/A3/A- | 0 | 0 |
| BBB+/Baa1/BBB+ | 0 | 0 |
| BBB/Baa2/BBB | 0 | 1 |
| BBB-/Baa2/BBB- | 15 | 0 |
| **Total Number of IG Bonds** | **38** | **24** |
| **Panel B** | | |
| | **Non-Investment Grade (Non-IG)** | |
| BB+/Ba1/BB+ | 6 | 1 |
| BB/Ba2/BB | 0 | 0 |
| BB+/Ba1/BB+ | 7 | 13 |
| B+/B1/B+ | 2 | 0 |
| B/B2/B | 1 | 0 |
| B-/B3/B- | 6 | 17 |
| CCC+/Caa1/CCC | 0 | 0 |
| CCC/Caa2/CCC | 0 | 0 |
| CCC-/Caa3/CCC | 0 | 0 |
| CC/Ca/CCC | 0 | 1 |
| C/Ca/CCC | 0 | 0 |
| D/C/DDD | 0 | 0 |
| D/-/DD | 0 | 4 |
| D/-/D | 0 | 0 |
| Total Number of Non-IG Bonds | 22 | 36 |
| **Total Number of Bonds** | **60** | **60** |

Table 3.4: Bond rating change summary

| **Rating Change** | **Number of Bonds** | **% of Bonds** |
|---|---|---|
| No Change | 25 | 42% |
| Downgraded | 34 | 57% |
| Upgraded | 1 | 2% |
| Total | 60 | 100% |

Table 3.5: Three-year changes in firm characteristics for CalPERS' target and control firm samples

This table presents mean [median] three-year changes ($\Delta$) in accounting and financial ratios for the sample of 49 firms (column 1) targeted by CalPERS and their matching control firms (column 2). Change is measured over one year following the year of CalPERS targeting minus one year preceding the year of CalPERS targeting. Control firms are matched by industry and annual SALE. For each variable, the winsorized mean, mean and median are reported. See 3.5 for variable definitions. All data are winsorized at the 5% and 95% levels. Column (1) and (2) contain significance levels for differences between the winsorized means in the fiscal year before the year of targeting and the fiscal year the year after targeting. ***significant at the 0.01 level; **significant at the 0.05 level; *significant at the 0.10 level.

| | Change in Winsorized Mean [ Before - After ] | | | Change in Mean [ Before - After ] | | | Change in Median [ Before - After ] | |
|---|---|---|---|---|---|---|---|---|
| | CFL Firms | Matching Firms | | CFL Firms | Matching Firms | | CFL Firms | Matching Firms |
| | (1) | (2) | | (3) | (4) | | (5) | (6) |
| **SIZE** | | | | | | | | |
| Total Assets | (269.47) | 2,193.10 | *** | 2,184.25 | 2,193.10 | | 8.90 | 2,193.10 |
| EBITDA | 511.17 | 298.37 | | 594.18 | 298.37 | | 16.07 | 298.37 |
| SALE | 1,449.09 | 1,535.42 | | 1,218.77 | 1,197.57 | | 102.03 | 1,197.57 |
| MktCap | 1,041.58 | 1,044.74 | | 913.06 | 1,044.74 | | 123.54 | 1,044.74 |
| **Firm Valuation & Profitability** | | | | | | | | |
| Book Value of Common Equity | (382.35) | 782.58 | ** | (394.25) | 799.82 | *** | (2.67) | 799.82 |
| Book-to-Market ratio | (0.04) | (0.06) | | (0.04) | (0.06) | | (0.05) | (0.06) |
| Tobin'Q | 0.01 | (0.05) | | 0.06 | (0.10) | | 0.05 | (0.10) |
| ROA | 0.02 | 0.00 | | 0.02 | 0.00 | | 0.01 | 0.00 |
| Operating Margin | 0.01 | 0.01 | | 0.01 | 0.01 | | 0.00 | 0.01 |
| **Leverage** | | | | | | | | |
| Total Debt | (609.85) | 486.02 | ** | (445.22) | 486.02 | | (26.00) | 486.02 |
| ST Debt-to-Assets | 0.00 | (0.01) | | 0.00 | (0.01) | | (0.00) | (0.01) |
| LT Debt-to-Assets | (0.01) | (0.00) | | (0.01) | (0.00) | | (0.01) | (0.00) |
| Total Debt-to-Assets | (0.00) | (0.00) | | (0.01) | (0.00) | | (0.01) | (0.00) |
| **Cash on Hand** | | | | | | | | |
| Cash-to-Assets | 0.01 | (0.00) | ** | 0.01 | (0.00) | | 0.00 | (0.00) |
| CashPlusInvt-to-Assets | 0.01 | (0.01) | | 0.01 | (0.01) | | 0.00 | (0.01) |

Table 3.6: Corporate event announcements after CalPERS' Focus List announcements
This table examines the difference in corporate announcements between the Focus-List firms and their matching firms in the remaining year after the announcements of the Focus List. Corporate event announcement data are obtained from Capital IQ Key Development database. The corporate announcements included in this table are based on 40 pairs of CFL firms and their uniquely-identified matching firms.

| **Corporate Development Event Type Name** | **CFL Firm Event Count** | **Matching Firm Event Count** |
|---|---|---|
| **Panel A**: Count(CFL) / Count(Match) $> 2$ | | |
| Executive/Board Changes - Other | 167 | 77 |
| Lawsuits & Legal Issues | 115 | 46 |
| Discontinued Operations/Downsizings | 49 | 22 |
| Buyback Update | 21 | 6 |
| SEC Inquiries | 17 | 0 |
| Labor-related Announcements | 15 | 0 |
| Executive Changes - CFO | 14 | 7 |
| Executive Changes - CEO | 13 | 4 |
| Dividend Increases | 10 | 4 |
| **Panel B**: $0 <$ Count(CFL) / Count(Match) $< 2$ | | |
| Business Expansions | 61 | 50 |
| M&A Transaction Announcements | 50 | 58 |
| Corporate Guidance - New/Confirmed | 49 | 44 |
| Strategic Alliances | 44 | 61 |
| Dividend Affirmations | 33 | 23 |
| M&A Rumors and Discussions | 22 | 38 |
| Seeking Acquisitions/Investments | 20 | 22 |
| Buybacks | 16 | 16 |
| Impairments/Write Offs | 11 | 8 |
| Corporate Guidance - Lowered | 10 | 6 |

# APPENDIX A

## CONSTRUCTIONS OF CONTROL VARIABLES

The following presents the definitions of control variables included in the multiple regressions. These variables include investor holding variables, deal characteristics variables, and firm characteristics variables.

### I. SHAREHOLDER PORTFOLIO VARIABLES

**Concentration** is the Herfindahl Index calculated over the institutional cash holdings.

**Fraction** is the ratio of a firm's shares held by institutional investors relative to total shares outstanding as recorded in Thomson 13f.

**Investor-turnover** is the weighted average of the average total portfolio churn rates of its investors over four quarters (see Gaspar et al. [2005] for details on the construction of the churn rates).

### II. DEAL CHARACTERISTICS

**Tender_offer** is a dummy variable equal to one if the bid is a tender offer (as recorded in SDC)

**Contested_deal_flag** is a dummy variable indicating whether SDC records another bid by a different bidder for the same target firm in the following six months (as in Officer [2003])

**Relative_size** is the ratio of value of M&A transaction over the sum of value of M&A transaction and the market capitalization of the bidder.

**Attitude** is a dummy variable indicating whether a M&A deal is as friendly (=1) or hostile (=0) in the "attitude" field in SDC.

**Toehold** is a dummy variable equal to one if the fraction of the target's common stock owned by the bidder is greater than 5% at the bid announcement date or zero otherwise (following Officer [2003]).

**Intra-industry** is a dummy variable indicating whether the acquisition involved two firms belonging to the same Fama and French [1997] 49-industry classification.

III. **FIRM CHARACTERISTICS**

**ROE** is the ratio of net income to stockholders' equity - total [COMPUSTAT item 174 / 144]

**Sale_growth** is the proportional change in sales [log COMPUSTAT items 12 / 12(t-1)]

**D2E** is the ratio of debt to equity [COMPUSTAT items 9/60]

**M2B** is the ratio of Price Close - Annual Fiscal * Earnings Per Share [COMPUSTAT item 54] plus total debt and Preferred Stock / Liquidating Value (COMPUSTAT item 10) minus Deferred Taxes and Investment Tax Credit [COMPUSTAT item 35], over total assets (COMPUSTAT item 6).

**PE-ratio** is the ratio of Price Close - Annual - Fiscal (prcc_f) over Earnings Per Share (Basic) / Excluding Extraordinary Items [EPSPX - COMPUSTAT item 58].

IV. **Year-Fixed-Effects** is the year of M&A announcements.

# APPENDIX B

## LIST OF ACTIVISTS INCLUDED IN THE FINAL ANALYSIS SAMPLE

| Index | mgrname | Activist Type | Activist Type2 |
|---|---|---|---|
| 1 | ACCIPITER CAPITAL MGMT, L.L.C. | HF | 1 |
| 2 | ADVISORY RESEARCH, INC. | HF | 1 |
| 3 | AKRE CAPITAL MANAGEMENT | HF | 1 |
| 4 | ANCORA ADVISORS, L.L.C. | HF | 1 |
| 5 | APPALOOSA MANAGEMENT, L.P. | HF | 1 |
| 6 | ATLANTIC INVESTMENT MGMT, INC. | HF | 1 |
| 7 | ATTICUS CAPITAL LP | HF | 1 |
| 8 | BAY HARBOUR MANAGEMENT, L.C. | HF | 1 |
| 9 | BLUM CAPITAL PARTNERS, L.P. | HF | 1 |
| 10 | BREEDEN CAPITAL MANAGEMENT LLC | HF | 1 |
| 11 | BRENCOURT ADVR LLC | HF | 1 |
| 12 | CANNELL CAPITAL MANAGEMENT | HF | 1 |
| 13 | CAXTON ASSOCIATES LP | HF | 1 |
| 14 | CHAPMAN CAPITAL, L.L.C. | HF | 1 |
| 15 | CHILDREN'S INV MGMT (UK) LLP | HF | 1 |
| 16 | CLARUS CAPITAL MGMT, L.L.C. | HF | 1 |
| 17 | CLINTON GROUP, INC. | HF | 1 |
| 18 | COBALT CAPITAL MANAGEMENT INC. | HF | 1 |
| 19 | COGHILL CAPITAL MGMT, L.L.C. | HF | 1 |
| 20 | COOPERMAN, LEON | HF | 1 |
| 21 | D. E. SHAW & CO., INC. | HF | 1 |
| 22 | DAVID M. KNOTT PTNR | HF | 1 |
| 23 | DEEPHAVEN CAPITAL MGMT LLC | HF | 1 |
| 24 | DELLACAMERA CAP MGMT, L.L.C. | HF | 1 |
| 25 | DIKER MANAGEMENT LLC | HF | 1 |
| 26 | DISCOVERY CAPITAL MGMT, L.L.C. | HF | 1 |
| 27 | DOLPHIN LIMITED PTNR III, L.P | HF | 1 |
| 28 | DUQUESNE CAPITAL MANAGEMENT, L | HF | 1 |
| 29 | ELKHORN PARTNERS L.P./PARSOW P | HF | 1 |
| 30 | ELLIOTT & ASSOCIATES, INC. | HF | 1 |
| 31 | EMINENCE CAPITAL, L.L.C. | HF | 1 |
| 32 | FAIRVIEW CAP INV MGMT, L.L.C. | HF | 1 |
| 33 | FARALLON CAPITAL MANAGEMENT, L | HF | 1 |
| 34 | FINANCIAL STOCKS, INC. | HF | 1 |
| 35 | FURSA ALTERNATIVE STRAT | HF | 1 |
| 36 | GREENLIGHT CAPITAL INC. | HF | 1 |
| 37 | GREENWOOD INVESTMENTS | HF | 1 |
| 38 | H. B. KORENVAES INVESTMENTS, L | HF | 1 |
| 39 | HARBINGER CAP PTNR MAST I, LTD | HF | 1 |
| 40 | HARVEST CAPITAL STRAT LLC | HF | 1 |

| Index | mgrname | Activist Type | Activist Type2 |
|---|---|---|---|
| 41 | HAWKSHAW CAPITAL MGMT, L.L.C. | HF | 1 |
| 42 | HAYMAN ADVISORS, L.P. | HF | 1 |
| 43 | HEALTHCOR MANAGEMENT, L.P. | HF | 1 |
| 44 | HIGHLAND CAPITAL MGMT, L.P. | HF | 1 |
| 45 | HOVDE CAPITAL ADVR LLC | HF | 1 |
| 46 | ICAHN & COMPANY, INC. | HF | 1 |
| 47 | ICAHN MANAGEMENT LP | HF | 1 |
| 48 | JANA PARTNERS, L.L.C. | HF | 1 |
| 49 | K CAPITAL PARTNERS, L.L.C. | HF | 1 |
| 50 | KARPUS INVESTMENT MANAGEMENT | HF | 1 |
| 51 | KARSCH CAPITAL MANAGEMENT, LP | HF | 1 |
| 52 | KEEFE MANAGERS, INC. | HF | 1 |
| 53 | LANE FIVE CAPITAL MGMT, LP | HF | 1 |
| 54 | LOEB PTNR CORP. | HF | 1 |
| 55 | LUMINUS MANAGEMENT, L.L.C. | HF | 1 |
| 56 | LUTHER KING CAPITAL MANAGEMENT | HF | 1 |
| 57 | M. J. WHITMAN ADVISERS, INC. | HF | 1 |
| 58 | MAGNETAR FINANCIAL LLC | HF | 1 |
| 59 | MARATHON PTNR | HF | 1 |
| 60 | MASON CAPITAL PTNR | HF | 1 |
| 61 | METROPOLITAN CAP ADVISORS INC. | HF | 1 |
| 62 | NEW MOUNTAIN CAPITAL, L.L.C. | HF | 1 |
| 63 | NEWCASTLE CAPITAL GRP, L.L.C. | HF | 1 |
| 64 | NIERENBERG INVESTMENT MGMT CO | HF | 1 |
| 65 | NORTHAVEN MANAGEMENT | HF | 1 |
| 66 | O.S.S. CAPITAL MANAGEMENT, LP | HF | 1 |
| 67 | OAKTREE CAPITAL MGMT, LLC | HF | 1 |
| 68 | OBREM CAPITAL | HF | 1 |
| 69 | ORBIMED ADVISORS, LLC | HF | 1 |
| 70 | PARDUS CAPITAL MGMT, L.P. | HF | 1 |
| 71 | PENNANT CAPITAL MANAGEMENT | HF | 1 |
| 72 | PENTWATER CAPITAL MGMT LP | HF | 1 |
| 73 | PEQUOT CAPITAL MANAGEMENT INC. | HF | 1 |
| 74 | PERRY CORP | HF | 1 |
| 75 | PERSHING SQUARE CAP MGMT, L.P. | HF | 1 |
| 76 | PUNCH CARD CAPITAL LLC | HF | 1 |
| 77 | PUPLAVA FINANCIAL SERVICES | HF | 1 |
| 78 | QVT FINANCIAL LP | HF | 1 |
| 79 | RA CAPITAL MANAGEMENT, LLC | HF | 1 |
| 80 | RAMIUS CAPITAL GROUP L.L.C. | HF | 1 |

| Index | mgrname | Activist Type | Activist Type2 |
|---|---|---|---|
| 81 | REED CONNER & BIRDWELL L.L.C. | HF | 1 |
| 82 | RELATIONAL INVESTORS LLC | HF | 1 |
| 83 | RILEY INVESTMENT MGMT, LLC | HF | 1 |
| 84 | RLR CAPITAL PTNR GP, L.L.C. | HF | 1 |
| 85 | S.A.C. CAPITAL ADVISORS, LP | HF | 1 |
| 86 | SANDELL ASSET MANAGEMENT | HF | 1 |
| 87 | SCHULTZE ASSET MANAGEMENT, LLC | HF | 1 |
| 88 | SCHWARTZ INVESTMENT COUNSEL | HF | 1 |
| 89 | SPENCER CAPITAL MGMT, L.L.C. | HF | 1 |
| 90 | SPRINGHOUSE CAPITAL, L.L.C. | HF | 1 |
| 91 | STADIUM CAPITAL MGMT, L.L.C. | HF | 1 |
| 92 | STEEL PARTNERS, L.L.C. | HF | 1 |
| 93 | STERLING CAPITAL MANAGEMENT CO | HF | 1 |
| 94 | STILWELL VALUE LLC | HF | 1 |
| 95 | SUMMIT CAPITAL MANAGEMENT, L.L | HF | 1 |
| 96 | T2 PTNR MANAGEMENT, L.P. | HF | 1 |
| 97 | THIRD POINT LLC | HF | 1 |
| 98 | TINICUM CAPITAL PARTNERS, L.P. | HF | 1 |
| 99 | TRIVIUM CAPITAL MANAGEMENT | HF | 1 |
| 100 | TUDOR INVESTMENT CORPORATION | HF | 1 |
| 101 | VALUEACT CAP PARTNERS, L.P. | HF | 1 |
| 102 | VECTOR CAPITAL MANAGEMENT, LLC | HF | 1 |
| 103 | WEXFORD CAPITAL LLC | HF | 1 |
| 104 | WHIPPOORWILL ASSOCIATES, INC. | HF | 1 |
| 105 | WINTERGREEN ADVISERS, LLC | HF | 1 |
| 106 | WYNNEFIELD CAP MGMT, L.L.C. | HF | 1 |
| 107 | WYSER-PRATTE MANAGEMENT CO., I | HF | 1 |
| 108 | FRASER MANAGEMENT ASSOC, INC. | Other non-HF | 0 |
| 109 | GABELLI ASSET MANAGEMENT CO | Other non-HF | 0 |
| 110 | GABELLI FUNDS INC | Other non-HF | 0 |
| 111 | GABELLI FUNDS, LLC | Other non-HF | 0 |
| 112 | GABELLI SECURITIES INC | Other non-HF | 0 |
| 113 | CALIFORNIA PUBLIC EMP RET SYS | PenAct | 0 |
| 114 | COLLEGE RETIRE EQUITIES | PenAct | 0 |
| 115 | COLLEGE RETIREMENT EQUITIES FD | PenAct | 0 |
| 116 | COLORADO PUBLIC EMP RET ASSN | PenAct | 0 |
| 117 | FLORIDA STATE BD ADMINISTRATIO | PenAct | 0 |
| 118 | NEW YORK STATE COMMON RET FD | PenAct | 0 |
| 119 | ONTARIO TEACHERS' PENS PLAN BD | PenAct | 0 |
| 120 | PENNSYLVANIA PUBLIC SCH EMP RE | PenAct | 0 |
| 121 | STATE OF WI INVESTMENT BOARD | PenAct | 0 |

## APPENDIX C
## VARIABLE DEFINITION AND DATA SOURCES

| Variable | Definition | Data Source |
|---|---|---|
| | **I. Bond Data** | |
| Long-Run Bond Return | $BR_{ijt} = ln[(P_{ijt} + AI_{ijt})/(P_{ijt-1} + AI_{ijt-1})]$ | TRACE, FISD |
| | **II. CFL Firm Characteristics** | |
| Total Assets (AT) | Total assets of the firm ($ millions) | COMPUSTAT |
| EBITDA | Earnings before interest, taxes, depreciation and amortization. | |
| SALE | Sales/Turnover (Net) | |
| Market Cap | Last Price ×Shares Outstanding | |
| Book Value of Common Equity | Common/Ordinary Equity - ==Total ($millions) | |
| Book-to-Market | Book value of equity divided by the market value of equity | |
| Operating Margin | EBITDA divided by SALE | |
| Tobin's Q | The market value of assets divided by the book value of assets (Compustat item 6), where the market value of assets is computed as book value of assets plus the market value of common stock less the sum of the book value of common stock (Compustat item 60) and balance sheet deferred taxes (Compustat item 74). | |
| ROA | Return on Asset (=EBITDA / Total Assets) | |
| Total Debts | Debt in Current Liabilities + Long-Term Debt | |
| Total Debt-to-EBITDA | (Debt in Current Liabilities + Long-Term Debt) / EBITDA | |
| Short-Term Debt to Assets | Debt in Current Liabilities / Total Assets | |
| Long-Term Debt to Assets | Long-Term Debt / Total Assets | |
| Total Debt-to-Assets | (Debt in Current Liabilities + Long-Term Debt ) / Total Assets | |
| Cash-to-Assets | Cash / Total Assets | |
| (Cash+Investment)-to-Assets | Cash and Short-Term Investments / Total Assets | |
| | **III.** Others | |
| Corporate Announcement Data | Event type ID, Event type name, Headlines | Capital IQ – Event Development |

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